University of Alberta

Nurse Educators' Perceptions of Learning Technologies in an Undergraduate Nursing Program

by

Kerry Laurene Rusk

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Dedication

Writing a thesis is a major life event. In the process of writing this thesis I have experience 2 other significant events.

Firstly, I married my husband Sean who has supported me and sacrificed with me throughout this process. This accomplishment is as much his as mine.

Secondly, I lost my Baba, the glue of my family. Her faith and courage has been an inspiration to me and I miss her dearly.

To my parents, who have provided me with unconditional love and support through the course of this thesis and my life. Everything I have accomplished is a reflection of your greatness as parents. No amount of thanks could ever be enough.

And finally, to the nursing faculty of Grant MacEwan College. First you were my teachers, then you became my colleagues, and now we are friends. You have encouraged and supported me to become the nurse educator I am today. I felt fortunate to be your student, and I feel more fortunate to call you colleagues.

Thank You.

Abstract

The advent of technology has had a profound affect on nursing education (Chaffin & Maddux, 2004). This qualitative study used focus group and photo elicitation techniques to explore the perceptions and experiences of nurse educators with respect to the use of learning technologies in the context of their teaching practice. The findings of this study indicate nurse educators are active participants in the teaching and learning process, have a desire to use pedagogically sound teaching strategies to facilitate student learning, and perceive there to be a benefit of using learning technologies. However, nurse educators' identified time, resources, and training as significant factors that prevent them from increasing their integration of learning technologies into their teaching, a finding substantiated in the literature. To effectively integrate learning technologies, nurse educators require training that will help them to understand the relationship between technology, pedagogy, and content knowledge.

Acknowledgement

There are many individuals that need to be thanked for their contributions to this thesis.

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Chapter One

Background

As a reflective educator in an academic institution, I continually evaluate the effectiveness of my teaching and challenge myself to find new and innovative ways to enhance student learning. As a strong believer in a learner-centered approach to teaching, I aim to create a learning environment where students are active participants in their own learning. As a nursing educator, I have a responsibility to ensure that nursing students have the "competencies necessary to provide safe, competent, and ethical nursing care in a variety of settings with a wide range of clients" (Canadian Nurses Association, 2004, p.1). Accordingly, I am faced with the challenge of using teaching and learning strategies that promote a student-centered learning experience and at the same time prepare students to practice as competent, ethical, and safe nurses. To achieve my goal, I began to explore and utilize learning technologies that enhance student participation and collaboration in their learning while preparing them for professional nursing practice.

As a nursing educator, I began to explore the use of learning technologies in 2004 after taking an online graduate research course that used WebCT, a learning management system. At that time I was teaching a second year community-based clinical nursing course and wanted to enhance the way I communicated and shared information with students. I was faced with the difficult task of gathering students in one location to debrief them and explore their experiences. I felt as though students were missing the very important collaborative aspect of learning. I began using WebCT in this course to help me overcome some of the teaching hurdles I was facing and I have continued to enhance my clinical nursing courses with WebCT since that time.

Currently, I use WebCT in many ways and for many different teaching purposes. To assist students in preparing for labs and clinical experiences, I post a variety of resources, worksheets, and Internet links on WebCT that students can view and download as they require. To enhance communication between myself and the students, as well as among the students, I utilize the chat room and discussion board tools of WebCT. This enables students to share and discuss their experiences in the clinical setting. It also allows them, with educator guidance, to test their ideas and thoughts about clinical situations and nursing practice. The discussion board provides me with a space to post course-specific information to ensure all students are receiving relevant information. The result is a blended learning environment where students receive face-to-face instruction and support in the clinical setting but are also given tools and opportunities to become self-directed, reflective practitioners.

Problem

Learning technologies are used throughout post-secondary education. For example, learning technologies enable educators to deliver courses online to students in remote locations using learning management systems such as WebCT, or to enhance the traditional face-to-face learning environment through blended learning. As there are many different learning philosophies and approaches to teaching and learning, the way in which these learning technologies are utilized varies according to assumptions made about teaching and learning and the educational philosophy and pedagogy of the educator using them (Creedy, Horsfall, & Hand, 1992). When I have taught courses incorporating WebCT, the students have consistently reported very high levels of satisfaction with this form of teaching and learning on their course evaluations. This is consistent with the literature on blended learning environments (Bloom & Hough, 2003; Jeffries, 2001; Sole & Lindquist, 2001). However, despite the high level of satisfaction my students have reported, the uptake of WebCT and other learning technologies by my colleagues and nurse educators in general has been slow.

Ribbons (1998) and Ingvarsen (1995) suggest that the overall delay in integration of learning technologies by nurse educators is due to lack of understanding about the roles and benefits of these teaching strategies. From personal experience, I believe Ribbons and Ingvarsen's explanation for the slow uptake of learning technology by nurse educators accounts for only a small part of the problem—which is the scarcity of learning technologies in nursing classrooms. Also, I question how and why nurse educators use learning technologies in their teaching practice, and what factors affect this usage.

Purpose

With the increasing use of learning technologies in post-secondary education, it has becoming increasingly important to ensure that their use is driven by sound pedagogical goals and values. The purpose of his study will be to increase our understanding of how nurse educators in one baccalaureate nursing program in Western Canada feel about learning technologies as teaching tools and to explore their perceptions of the integration of learning technologies within the context of their teaching approach.

Research Questions

The overall research question for this study is: What are nurse educators' perceptions of the integration of learning technologies within the context of their teaching approach in undergraduate nursing education?

The related research questions are:

1. How do nurse educators use learning technologies in their teaching?
2. What do nurse educators perceive as being supportive in their use of learning technologies in their teaching?
3. What do nurse educators perceive as inhibiting the use of learning technologies in their teaching, and what support mechanisms do nurse educators describe as important to the adoption of learning technologies in their teaching?

Objectives of Research

The objectives of this study are to explore nurse educators' perceptions, experiences, and beliefs regarding the use of learning technologies as teaching and learning strategies in baccalaureate nursing programs. Specifically, the objectives are to:

1. Elicit nurse educators' perceptions of the use of learning technologies within their teaching approach;
2. Understand nurse educators' experiences with learning technologies as students, as well as in their own teaching practice;
3. Explore nurse educators' perceptions of supports and facilitators for the use of learning technologies; and

4. Examine nurse educators' perceptions of the barriers to pedagogically useful applications of learning technologies within their teaching practice.

Significance

There is a wealth of quantitative research identifying the various factors that affect post-secondary educators' use of learning technologies. However, little research has been undertaken within the nurse educator population to ascertain experiences with and perceptions of learning technologies. For example, research suggests that post-secondary educators believe lack of time is the predominant reason for failure to use web-based technologies in their teaching practice. This leads me to question whether the issue of time is a factor for nurse educators who contemplate using learning technologies such as WebCT. I believe the issue of learning technology use by nurse educators is complex and cannot be readily broken down into numbers or factors. While I have a sense that some of the findings from the literature may also apply to the nursing educator population, I am not confident that the current literature sufficiently explores this issue. To support the optimum integration of learning technologies by nurse educators, we need further knowledge of the ways in which nurse educators currently use learning technologies in their teaching practice, as well as an understanding of the barriers and facilitators which nurse educators feel affect their use of learning technologies. This study will contribute to our development of this knowledge.

Philosophical Assumptions about Teaching and Learning

It is important in qualitative research for the investigator to be open and honest about his or her beliefs and assumptions. Therefore I feel it is important to share my own beliefs about teaching and learning.

My entire undergraduate nursing education was received using a problem-based learning approach to teaching and learning. Working in small groups, I was given client scenarios to reflect upon and analyze. In groups we determined what was necessary for us, as nurses, to know for the care of clients. Individual study and research was essential as each nursing student was required to bring relevant information to share with the group. Personally, I loved this approach to learning. Unlike my previous science education where I sat in a large lecture hall with 200 of my peers and frantically scribbled down every word the professor said and wrote, I felt as though I had a responsibility for my own learning in nursing school. I enjoyed being given a problem or situation to work through and found it stimulating to have the freedom to investigate a variety of topics. I also took great pleasure in finding creative ways to share my research with my peers.

It is no surprise that my current philosophical beliefs about teaching and learning stem from my own experiences with problem-based learning. As a registered nurse who teaches nursing students, I believe that it is important for me to set an example of the behaviors, values, and attitudes required of registered nurses. I believe this requires being actively engaged with students in the learning process both in the classroom and in the clinical setting. I believe that knowledge is continually acquired through the process of building upon and reshaping previously held knowledge. Thus, I believe nursing students should learn to reflect on their experiences so they can place them in a larger frame of reference. I also believe that learning cannot be confined to the walls of a classroom or clinical setting. Perhaps the best way to summarize these beliefs would be to share my favorite educational quote by Donald C. Hambrick (in Andre & Frost, 1997):

> Teaching isn't just the conveyance of information. If it were, few of us should have jobs because textbooks and articles can impart knowledge just fine. Teaching isn't a dazzling show by an expert … rather, to teach is to enter into a relationship. To conduct a course is to orchestrate student knowledge, motivation, anxiety, and energy. To teach is to understand the pulse of the classroom, the emotional and intellectual ebbs and flows, how far students can stretch and how they can learn the most from each other. The loftiest aim of teaching is not to impart students a new block of knowledge and skills, but rather to maximize their readiness and eagerness for further, lifelong learning.

My personal experience with WebCT and other learning technologies has led me to the literature and this thesis.

Chapter Two

Literature Review

The advent of technology has had a profound influence on nursing education and nursing practice (Chaffin & Maddux, 2004; Christian, 2003; Lindeman, 2000; Rankin & Hoass, 2002). Emerging learning technologies are being rapidly integrated into a variety of post-secondary educational settings (Ross-Kerr, 2003). WebCT is just one example of a learning technology that uses a broad range of communication, information, and related technologies to support learning and teaching (Association for Learning Technology, 2006). The use of technology as a tool to support learning will depend on the teaching style of the educator, his or her values and beliefs about learning, and the learning activities they design (Shovein, Huston, Fox, & Damazo, 2005). For example, educators who believe in a teacher-centered approach, where the student is seen as a passive learner, could use technology as a "tutor for basic skill acquisition" (Gibson, 2001, p.42) where students engage in drill and practice activities. Technology would take on a vastly different role in a student-centered environment where it could provide learners access to information, opportunities for collaboration, and a medium for creative thought and knowledge construction (Gibson).

From my own experience, a common mistake is using technology for the sake of using technology. Educators often begin using learning technologies and then convince themselves that there is "value-added" to the classroom by their continued use (Grasha & Yangarber-Kicks, 2000). "Unless pedagogy drives the use of technology, we may perpetuate ineffective teaching/learning behaviors, falling short of our goal" (Cartwright, 2000, p. 89) of assisting students to develop the necessary skills to become safe, competent, and reflective practitioners. The challenge for educators is not to find the best learning technology, but rather to find "the best pedagogic answer to the numerous learning challenges" (Cartwright, p. 89) they are faced with in their teaching practice. Educators should remember that technology itself does not improve student learning and outcomes, but rather it helps create "circumstances and opportunities under which there is a positive effect" (Gibson, 2001, p. 48) on student learning. I searched for teaching and learning tools that supported my teaching style and belief in student-centered learning, facilitated collaboration among students and between students and educator, and revealed the educator as facilitator rather than expert. WebCT was congruent with my pedagogical beliefs and teaching style. However, one may question whether learning technologies are consistent with all teaching styles..

Teaching Styles

Educators' views on and approaches to learning create the environment in which learning occurs (Schaefer & Zygmont, 2003). Teaching styles can be simply described as educators' personal behaviors. An educator's teaching style is the implementation of his or her philosophy, which includes his or her beliefs about values and attitudes toward the teaching and learning process (Lacey, Saleh, & Gorman, 1998). As educators, we each have our own preferred teaching style that reflects our pedagogical beliefs about teaching and learning. Numerous models of teaching styles exist: for example, teaching styles may be teacher-centered or student-centered.

Nursing education provided in hospitals and academic institutions has traditionally followed a teacher-centered approach; that is, the learning materials and objectives are determined by the educator who "transmits" knowledge via a lecture-based format; the students are considered passive receivers of this knowledge (Schaefer & Zygmont, 2003). This teaching approach is based on the assumptions that the learner is dependent on the educator for all learning, and that the teacher accepts full responsibility for the learning of the student. The antithesis to the teacher-centered approach is the student-centered approach, the premise of Knowles' adult learning theory (Haith-Cooper, 2003). An example of this approach is problem-based learning which has been selected as the teaching and learning approach by many faculties of nursing in Canada as of the mid-1990s. This approach to teaching and learning assumes the learner is self-directed and willing to accept responsibility for his/her own education. In the student-centered approach the learner is considered to have a wealth of personal knowledge available to the learning process; the focus of this approach is on the "needs of the students rather than the knowledge to be transmitted" (Schaefer & Zygmont). In a student-centered approach, students are encouraged to question information and, when faced with a relevant task or problem, demonstrate the necessary motivation to seek solutions (Ed Psyc Central Psychoeducational Resource Center, 2004).

Rather than categorizing teaching styles as either student- or teacher-centered, Grasha and Yangarber-Hicks (2000) identified five teaching styles present in varying degrees in all educators. The "expert" possesses the knowledge and experience students seek and is concerned with transmitting his/her knowledge (Grasha &

Yangarber-Hicks, p.5). The "formal authority" has status among students due to his/her knowledge and role as a faculty member and is concerned with providing students structure (Grasha & Yangarber-Hicks). The "personal model" believes in teaching by personal example and guides and directs students by showing them how to do things and by encouraging them to "emulate the educator's approach" (Grasha & Yangarber-Hicks, p.5). The "facilitator" promotes the personal nature of the educator-student relationship and encourages cooperation as well as independent learning activities (Grasha & Yangarber-Hicks). For the facilitator the goal is to assist students in developing the capacity for "independent action, initiative, and responsibility" (Grasha & Yangarber-Hicks, p.5). Finally, the "delegator" is concerned with developing students' abilities to work as autonomous individuals (Grasha & Yangarber-Hicks). The delegator is "interested in having people become self-directed, self-initiating learners" (Grasha & Yangarber-Hicks, p. 5).

According to Grasha and Yangarber-Hicks (2000), learning technologies can be congruent with each of the teaching styles described above and can be effective tools in transmitting knowledge to students. Educators with expert and/or formal authority teaching styles may "find the information transmission capabilities" (Grasha & Yangarber-Hicks, p. 6) of learning technologies useful. Educators with the personal model teaching style can use learning technology to illustrate or demonstrate—nursing procedures, for example. Learning technologies can assist educators to coach, guide, and role model behaviors and procedures required of nursing students in professional practice. For educators with facilitator and/or personal model teaching styles, the use of learning technologies can often appear incompatible. However, learning technologies can be used to facilitate interactions and encourage active learning in students. For example, students may be assigned to small groups for work on case studies using resources on the Internet. Discussion boards and chat rooms can be offered to these groups to facilitate collaboration and student interactions. Educators with a delegator teaching style aim to adopt the roles of consultant and resource person. Learning technologies may be used by the delegator to facilitate online literature searches or communication with the educator.

How and when we use learning technologies reflects our beliefs about how people learn and our views of our role as educators in that learning process. We must choose learning technologies congruent with our own teaching styles, and we must assess and evaluate the impact of learning technologies on preparing students for professional nursing practice.

Learning Technologies in Baccalaureate Nursing Programs

Nursing informatics is the use of technology and/or computer systems to process and communicate data and information across health care services. This technology is emerging as an essential component of professional nursing practice as health care systems attempt to provide quality, cost-effective care (Elfrink et al., 2000; Hovenga, Kidd, & Cesnik, 1996). Graduates of baccalaureate nursing programs require exposure to and experience with technology to prepare them for practice in a technologically rich health care environment (Canadian Nursing Informatics Association [CNIA], 2003).

However, technology in nursing education must not be used for the sole purpose of ensuring graduate nurses are prepared to work with a variety of technologies. We must not become "nurses whose goal is to get all the information to the students" (Schaefer & Zygmont, 2003, p.243). Rather, our role is to help nursing students learn to become self-directed, autonomous individuals able to engage in lifelong learning and safe clinical practice. We must therefore ensure that the learning technologies we use are pedagogically sound and promote student learning and graduate competencies.

Benefits to student learning. Much of the literature related to learning technologies focuses on the effects or potential effects such technology has on student learning. One of the primary benefits of utilizing the Internet as a learning technology in baccalaureate nursing education is the quantity and quality of information available to nursing students. Information produced by nurses for nurses is available on the Internet through websites, online databases, bulletin boards, chat rooms, and mailing lists (Murray, 1996; Ribbons, 1998). The Internet and the World Wide Web provide access to up-to-date and pertinent information not readily available in textbooks (Daugherty & Funke, 1998; Pajo & Wallace, 2001) which nursing students and educators can use to supplement materials discussed in the classroom.

Post-secondary educators have noted several advantages to the integration of learning technologies (blended learning) in the classroom. Several studies have found that students in blended learning environments demonstrate higher levels of knowledge gains (Bauer, Geront, & Huynh, 2001; Rouse, 2000; Taradi & Taradi, 2004). In a study by Taradi and Taradi (2004) of medical students (n = 220) in a physiology course, the authors attempted to determine the effectiveness of an asynchronous learning environment (online discussions) as a supplement to face-to-face interactions. Participation in the asynchronous discussions was optional and no additional credit was given to students who participated. Discussions of relevant questions involved the educator and the students. While only 25% (n = 55) of the students enrolled in the course participated in the asynchronous discussions, a comparison of the final examination scores revealed that there was a statistically significant (P = 0.0328, t = 2.1526) difference between the scores of those who participated in the asynchronous discussions and those who did not, with those participating in the asynchronous discussions scoring significantly higher on the final examination (Taradi & Taradi). The authors noted several further advantages of asynchronous discussions. They believed the discussions provided greater time for reflection than the face-to-face environment allowed, and gave students the opportunity to seek clarification from educators and peers as soon as issues arose (Taradi & Taradi). My anecdotal evidence supports the authors' conclusions. As an educator who has used asynchronous discussions in both theory and clinical courses, I have often found myself in awe of the comments students have made in online discussions. When I have encouraged students to share their insights in our face-to-face discussions they frequently cite being too shy or nervous to vocalize their thoughts in the group. Some state that their thoughts came to them only after leaving the classroom or clinical setting and reflecting on their experiences. My students have also expressed that they felt more connected to their classmates when using asynchronous discussions as they could continue dialogues regarding clinical experiences with their peers outside of the clinic setting. A limitation to Taradi & Taradi's findings is that, as participation in the asynchronous component of this course was voluntary, there is a possibility that students who joined the online discussions were highly motivated individuals who may have scored higher on the final examination with or without this resource.

Wiecha, Vanderschmidt, and Schilling (2002) studied the effects of offering medical students (n = 105) a blended learning environment in their clerkship (clinical learning experience). Students in alternating clerkship blocks received face-to-face classroom instruction supplemented with an online learning component composed of self-study modules related to diabetes and evidence-based medicine, and used web-based literature searches, viewing of streaming videos, case study analysis, and asynchronous discussions. After conducting this study for a year, Wiecha et al. found that groups instructed in a blended learning environment had a statistically significant difference ($p < 0.05$) in the ability to apply evidence-based medicine compared with groups that did not receive instruction in a blended learning environment. The authors of this study did not provide further statistical information regarding the analysis of data. According to the entry-to-practice competencies outlined by CARNA (2005) new graduate registered nurses entering the workforce must strive to "acquire knowledge and skills to provide competent, evidence-based nursing practice" (p. 8) and be able to "support decisions with evidence-based rationale" (p. 8). Thus it is imperative as nurse educators that we utilize teaching tools which will give students the necessary practice to develop skills in utilizing evidence in practice.

Lipman, Sade, Glotzbach, Lancaster, and Marshall (2001) conducted a study to determine the effect of "computer-based methods of instruction" (p. 1060) on "helping medical students learn clinical skills and professionalism" (p. 1060). All students enrolled in an Introduction to Clinical Ethics course were randomly assigned to one of two groups—those that received face-to-face instruction (n = 65), and those that received face-to-face instruction supplemented with an Internet component (n = 62). The results of this study found no statistical difference on final course grades between the traditional and the Internet component groups (3.7 ± 0.4 and 3.6 ± 0.3, respectively) (Lipman et al.). However, differences were noted between groups with respect to how students understood and analyzed ethical situations. Students in both groups were evaluated on written responses to an ethical case scenario essay question (case analysis). External reviewers were asked to review and grade this case analysis on a 1.0 – 4.0 scale. Grades from the external reviewers were "significantly higher for those students in the course with the Internet component than they were for the students in the traditional group" (3.0 ± 0.6 and 2.6 ± 0.7, respectively; $p < 0.005$) and had a significant inter-rater reliability ($\alpha = 0.62$, $r = 0.48$, $p < 0.05$) (Lipman et al., p. 1062). Lipman et al. concluded that the use of an Internet component (blended learning) assisted in the development of students' overall understanding and ability to analyze ethical situations. Lipman et al. did not address the issue of computer literacy and skills of the participants in their study. As students were randomly assigned to one of the two groups in this study, students with limited computer and Internet skills may have been assigned to the group that received face-to-face instruction supplemented with an Internet component. Lack of computer and Internet skills may have acted as a barrier to students learning in this group and may have had an impact on the findings of this study.

As a registered nurse, I am bound by the Code of Ethics set out by the Canadian Nurses Association (2002) and have a professional obligation and responsibility to engage in ethical nursing practice. As a nursing educator, it is essential that I assist students in understanding what ethical nursing care entails, as well as to appreciate the role ethics plays in professional nursing practice. Learning activities must be incorporated throughout baccalaureate nursing programs to ensure nursing students are given ample opportunity to explore their own assumptions, understand professional boundaries, and practice coping with ethical dilemmas under the guidance of their educator and with the assistance of their peers.

In a study by Bauer et al. (2001), three delivery methods for teaching first year nursing students (n = 73) to measure blood pressure were compared. The three treatment groups included: Group A (n = 23) which viewed only a CD-ROM, Group B (n = 23) which received the CD-ROM along with face-to-face instruction, and Group C (n = 21) which received only face-to-face instruction. At the end of the treatment, students were measured and groups compared (using a chi-squared test, P = 0.01) with regard to their adherence to the recommended steps of the procedure for blood pressure measurement. The results of this study were that Group B, CD-ROM plus face-to-face teaching, complied with more steps of the process consistently than the other two groups. Group A, the CD-ROM only group "adhered to only 2 of the 16 steps of the procedure" (Bauer et al., p. 140), while Group B, the CD-ROM plus face-to-face teaching group, adhered to 12 steps of the procedure. Group C, the group receiving only face-to-face instruction adhered to 9 steps of the procedure (Bauer et al.). In a similar study conducted by Rouse (2000) (n = 72), three different "instructional intervention strategies" (p. 282) were used to teach students about congenital heart disease. Like the Bauer et al. study, the three instructional strategies used in Rouse's study included a group which was given an interactive CD-ROM on the topic of congenital heart disease (n = 26), a group which received the interactive CD-ROM and a traditional classroom lecture (n = 20), and a group which received only the traditional classroom lecture (n = 26). A pretest-posttest method was used and the tests contained the same questions but in different orders (Rouse). The test was "evaluated for reliability using Kuder-Richardson's formula and found to have a reliability coefficient of 0.665" (Rouse, p. 284). The study determined that the group of students receiving instruction though interactive CD-ROM and a traditional classroom lecture had the largest incremental difference in mean score ($P < 0.001$). Students in the group receiving instruction via CD-ROM only had a difference in mean score of 19.6, while students in the group receiving traditional instruction had a difference in mean score of 18.3. Students receiving traditional instruction supplemented with a CD-ROM had a difference in mean score of 35.3. The results of these studies suggest that a blended learning environment that utilizes learning technologies such as interactive CD-ROM may assist nursing educators to develop the knowledge and skills of nursing students to engage in safe clinical practice. The findings of these studies may reflect the fact that offering knowledge and demonstration of skills in a variety of formats (i.e. visual, text, audio) may reach a greater number of students who have differing learning preferences. Materials and demonstrations presented in different formats may reinforce learning in more ways to more students.

Literature reviews by McAllister and Mitchell (2002) and Cravener (1999) found that post-secondary educators feel that web and email interactions are a flexible means of communicating between students and educators, and thus increase opportunities for interaction between the two groups. They also found that educators with online teaching experience felt that the increase in access to a wide variety of materials provided by the Internet led students to have increased feelings of independence and learning (Cravener; McAllister & Mitchell). Email is the "world's fastest growing form of communication" (Ribbons, 1998, p.414) and its use as a learning technology by nursing students and educators in baccalaureate nursing programs has many advantages. In a study by Daugherty and Funke (1998), undergraduate health science students enrolled in a "web-based instruction" course were questioned to obtain "descriptions of perspectives of instruction and learning via the World Wide Web" (¶ 9). Students who were questioned remarked on the "utility of email," describing it as having many assets that face-to-face classroom contact lacked. Advantages described by the students included: not having to wait for the next class to ask a question of the educator; providing a medium for quieter students who would never speak up in class to ask questions of the educator; and easier to use than leaving messages for the educator.

Perhaps the most consistent finding from the literature with regard to blended learning is the high level of self-rated student satisfaction with this form of teaching and learning (Balwin, Johnson, & Hill, 1994; Bloom & Hough, 2003; Jeffries, 2001; Maag, 2004; Serly-Ble, Taffe, Clarke, & Dorman, 2001; Sole & Lindquist, 2001). Interactive learning activities that involve the computer and Internet are thought to enhance cognitive outcomes and promote the learning of computer skills (Mayer, 2001). In a study by Bloom and Hough (2003) (n = 371), undergraduate students registered in a health college were surveyed regarding their satisfaction with a variety of computer-assisted instruction techniques and web-based technologies such as PowerPoint, use of email, and WebCT and Blackboard software. Students were asked to respond to a variety of questions using a 5-point Likert scale with 1 representing *Strongly Agree* or *Very Satisfied.* When asked if the use of PowerPoint presentations greatly enhances learning, students (n = 368) responded with a mean score of 1.35. When asked if being able to contact educators via email was helpful, students (n = 371) responded with a mean score of 1.67. Finally, when asked if they felt "computer technology and instruction greatly enhanced [their] ability to learn" students (n = 368) responded with a mean score of 2.02 (Bloom and Hough, p. 244)

Diekelmann and Schulte (1993) believe that engaging students in information dialogues builds insight, shared understanding, connection, and dialogue—all necessary keys to "emancipation, change and the advancement of nursing" (p.5). However, as nursing educators we must remember that learning technologies are not a panacea for the educational challenges we face and there are disadvantages to the utilization of learning technologies as teaching and learning strategies in post-secondary education.

Potential disadvantages to student learning. While many proponents of the use of learning technologies in higher education argue that these technologies widen access to education, many authors suggest that the sheer nature of these technologies achieves just the opposite. The use of learning technologies involving the Internet requires students to either own or have access to a computer on a regular basis. Students who cannot afford a computer or who do not have access to a computer are disadvantaged (Daugherty & Funke, 1998; McAllister & Mitchell, 2002; Pajo & Wallace, 2001). For students who are not computer literate, the use of web-based technologies may cause "anxiety, self-doubt, and reluctance" (Washer, 2001).

McAllister and Mitchell (2002) also suggest that gender inequalities may be a factor in the use of web-based technologies by post-secondary students—as men have been found to use computer resources more frequently than women, despite having equal access. The issue of access to computers is also a concern as studies have shown that computers are owned and used predominantly by males (Campbell, 2000). While public computers are available for students on campuses, evidence that male use of computers exceeds female use suggests that access to technology is still limited for women in comparison to men (Barrett & Lally, 1999; Washer, 2001; Yates, 1997). As the predominant gender of nursing students is female, this could be a particular concern for nursing programs. In surveys conducted by McMahon and Gardner (1995) and Selwyn, Marriott, and Marriott (2002) it was found that female post-secondary students used publicly available computers on campus less than their male counterparts.

From an educator's perspective, it is important to have a grasp of the learning preferences and methods of the student population. As the primary form of communication with web-based technologies is textual, the visual nature of these technologies may not suit students who learn well by listening or observing. The abundance of information available on the web may also become an issue for students who are beginning their nursing studies and do not yet have the skills to discriminate between essential and nonessential information and reliable and nonreliable sources (Roberts et al., 1998).

As a practice discipline, nursing grapples with ensuring that baccalaureate nursing programs bridge the practice-theory gap. Understanding some of the advantages and disadvantages of utilizing learning technology in post-secondary education—specifically in baccalaureate nursing programs—is important, as the challenge for nurse educators is to incorporate these technologies into their teaching and "use it to assist and enhance our ability to prepare nursing students to meet the demands of professional nursing practice" (Kenny, 2000). The opportunity now exists for nursing educators to use learning technologies as educational teaching tools or delivery methods (Billings, Connors, & Skiba, 2001; Cooper, Taft, & Thelen, 2004; Kenny, 2002). It is up to nursing educators to reflect on their pedagogical beliefs of teaching and learning and decide if and how these learning technologies can be used to enhance the learning environment and outcomes of nursing students.

Factors Influencing the Utilization of Educational Technologies by Educators

A review of the literature suggests that while authors have explored this question in relation to university educators in general, nurse educators in baccalaureate nursing programs have conducted little research to explore the factors that influence the utilization of learning technologies such as web-based technologies. The research to date has focused primarily on the barriers and motivating factors which influence an educator's engagement in distance education. While the findings of these studies do not specifically relate to nurse educators and blended learning environments, they provide insight into some of the issues faced by post-secondary educators with regard to the use of learning technologies as teaching and learning tools. What follows is a review of the barriers and motivating factors that affect the utilization of learning technologies, specifically web-based technologies, by post-secondary educators.

Barriers/inhibiting factors. Fabry and Higgs (1997) identified a gap between the expected and actual levels of technology use by university educators, and suggested a number of factors that may account for this gap. Recurring themes in the literature include concern over academic standards, educators' attitudes and resistance to change, the adverse impact on other academic work, time constraints, and the absence of adequate support (Daugherty & Funke, 1998; Hare & McCartan, 1996; Thompson & Holt, 1996). In 2001, Pajo and Wallace conducted a study whereby educators (n = 250, response rate = 34.8%) from business, science, and education colleges at an Australian university were questioned regarding their use of technology in teaching, its relative value, and the main barriers, advantages, and disadvantages they associated with web-based technology.

The most notable result of this study was the finding that staff appeared "to make little use of most of the technologies" (Pajo & Wallace, 2001, ¶13) with the exceptions of email, where over 90% of respondents reported regular use, and electronic databases, where over 70% stated they used this technology (Pajo & Wallace). Also notable was that three of the four most prohibitive factors identified by the educators in this study were related to issues of time. The most significant of these prohibitive factors, identified by over 70% of responding educators, was the time required to learn how to use technology (Pajo & Wallace). Research participants also reported that issues of organizational support such as lack of technical support and training, insufficient resources, and the perception that the institution did not "recognize or reward efforts to integrate web-based technologies" (Pajo & Wallace, ¶15) were considered to be significant barriers to the utilization of web-based technologies (Pajo & Wallace). Similar results have been found in other studies with university educators in engineering, education, arts, medicine, and health science disciplines (Daugherty & Funke, 1998; Hare & McCartan, 1996; James & Beattie, 1996; Mudge, 1999; Schifter, 2000; Thompson & Holt, 1996; Wolcott & Betts, 1999). Pajo and Wallace also found that the current use of web-based technology was closely associated with personal barriers. For example, educators who felt they lacked the skills and training to use technology and who perceived that it required a great time commitment were less likely to incorporate technology into their classrooms. Future intentions to adopt or ignore web-based technologies by these educators were closely associated with their attitudes and beliefs about web-based technologies.

In Betts' (1998) dissertation on factors that positively or negatively influence faculty participation in distance education, educators at a metropolitan university in the eastern United States were questioned using three surveys constructed by Betts. These surveys were reviewed in a "series of five stages by survey panelists" (Betts, p. 93) and after the forth review of the surveys, all three surveys were pilot tested and Cronbach Alphas were calculated for their reliability (0.8153, 0.7415, and 0.9673). Respondents (n = 532, response rate 51.6%) were categorized as either participants (n = 36) or nonparticipants (n = 446) in distance education. Of the nonparticipants, only

94 reported having contemplated becoming involved with distance education and 90% of these respondents decided against it because of lack of time, concerns about the absence of face-to-face interaction, lack of skills needed to use technology, concerns about quality, lack of recognition and awards for teaching online, and concerns about lack of technical and financial support (Betts). Like Pajo and Wallace's (2001) findings, time was the primary inhibitor of the utilization of web-based technologies in Betts' study.

In 2000, Schifter used a modified version of Betts' (1998) surveys to study motivating and inhibiting factors that affect faculty participation in asynchronous learning environments. A description of how Betts' surveys were modified and reliability and validity testing for the modified version were not supplied. Schifter distributed this modified survey to all faculty members (n = 263, response rate 20%) and administrators (n = 11, response rate 44%) at a "large, urban, Research 1 state related institution" in the United States. Faculty members were asked to rate on a scale of one to five 29 factors describing to what extent they felt these factors had motivated or would motivate them to participate in distance education. Respondents were categorized as either participating faculty (n = 38), nonparticipating faculty (n = 225), or administrators. In Schifter's study, all three groups rated "lack of technical support provided by the institution" as the top inhibiting factor for faculty participation in distance education. Interestingly, in both Schifter's (2000) and Betts' (1998) studies, the top inhibiting factors identified by participating educators were more extrinsic than intrinsic in nature.

Ihrke's (2002) dissertation at Perdue University aimed to describe the "use and integration of educational technologies by nurse educators in baccalaureate nursing programs" (p. 82). Using the diffusion of innovation framework (Rogers, 1995), a descriptive survey research design was employed. The "Faculty Use of Educational Technologies Survey" (Ihrke, p.34) developed by Spotts and Bowman (1995) and also used by Groves and Zemel (2000) was used in this study. No reliability and construct validity studies have been conducted on this survey, however, the survey was evaluated for content validity by "experts" (Ihrke, p. 34) at Spotts', Bowman's, and Zemel's universities. In Ihrke's study, 220 nursing educators teaching in baccalaureate nursing programs in Indiana were surveyed. Analysis of the 95 responses (response rate = 43%) revealed that the factor that most influenced the use of educational technologies was equipment availability—more specifically, the perceived lack of equipment (Irhke). This finding is supported in studies by Boddy (1997) and Saranto and Tallberg (1998). According to Spotts (1999), a favorable perception of an innovation or technology will increase the likelihood of its adoption. According to Rogers (1995) there are five attributes which form the perception of an innovation. These five attributes are: relative advantage (is it better than what is presently used?); compatibility (is it consistent with the adopter's beliefs and values?); complexity (how difficult is it to use?); trialability (how easy is it to experiment with?); and observability (how visible are the results?). Using the diffusion of innovation framework, Irhke found that the relative advantage of technology was "perceived as most influencing the adoption of technology in the teaching/learning process" (Ihrke, p. 92). This suggests that if nurse educators do not feel technology is better than what they are currently using, they are unlikely to adopt technology into their teaching practice. Another important finding from Ihrke's study was that over 30% of respondents cited compatibility as a key factor influencing their decision to adopt learning technologies. Nurse educators who do not seek or receive assistance with regard to the pedagogical implications of using technology in the teaching and learning process may feel that the use of technology is inconsistent with their pedagogical assumptions and beliefs. For an example, in an exploratory case study conducted by Fehn (2005), a study participant (a nursing faculty member) described her concern about the appropriateness of web-based technologies and instruction for entry level nursing students. This participant felt that these students needed face-to-face contact and support, and felt "there is a lot of benefit to most students to have the camaraderie and connectedness to the rest of the class" (Fehn, p.118). From this example, it is clear that the participant as an educator values the connectedness that is created with face-to-face interactions among students and between students and teachers, and has concerns that the use of technologies could weaken this connectedness. This is a clear example of how perception of compatibility could prevent nurse educators from using learning technologies in their teaching practice.

Other reasons for nurse educators' failures to readily adopt education technologies into their practice have been discussed in the literature. Many authors suggest that since most nurse educators have not been prepared as teaching faculty, they have little experience with technology use in the classroom environment (Carty & Rosenfeld, 1998; Ihrke, 2002; Krisman-Scott, Kershbaumer, & Thompson, 1998).

Since the majority of nurse educators today were not exposed to computers during their own education, this may make it more difficult for them to incorporate learning technologies into their teaching practice (Austin, 1999; Ihrke).

Perhaps, however, a significant barrier to the use of learning technologies by nurse educators is the issue of gender. Nursing is a predominately female profession; St-Denis (2003) estimates that women represent 95% of all nursing faculty positions in Canada. Anecdotal evidence suggests that men may be more comfortable than women with technology (Cooper, 1999). In Cooper's study of the gender differences in nurse educators' perception of information technology, a modified version of Maurer's Computer Anxiety Index questionnaire was utilized. In Maurer's (1983) study, internal consistency was calculated for two different groups. First, the questionnaire was tested on subjects in a pilot study and the reliability for this group was 0.94. A second randomly selected group of subjects (n = 25) who were not involved in the pilot were also given the questionnaire and the reliability for this group was 0.96. Cooper modified Maurer's original Computer Anxiety Index questionnaire by adding questions related to the demographic makeup and computer usage and then piloted the study at three different nursing schools. Using the data from a second and third pilot, a reliability of the modified Computer Anxiety Index questionnaire was found to be 0.95 (Cooper). Participants for Cooper's study were sampled from "8 institutions of nursing education" (p. 52) in England and the response rate to the surveys was 82.9% (145 males and 393 females) (Cooper). The study found that "males had a more positive attitude toward information technology than the female nurse teachers" (Cooper, p. 100). While there was no significant difference with respect to access to a computer and the Internet at home or the office, male educators used significantly more applications such as email, literature searches, and the web than their female counterparts at home and at work (Cooper). One female respondent of this study said she "did not feel comfortable about spending time with a computer when there are family activities to carry out" (Cooper, p. 102), while another commented that "there is something decadent … about spending time in front of a computer screen when there's family to care for" (Cooper, p. 107). These comments bring to light an important point regarding work-life balance issues as well as female and male roles in society (Cooper). As the literature has shown that time is a major barrier to using web-based technologies as a teaching strategy (Pajo & Wallace, 2001), the pressures of childcare and household duties may be a significant factor preventing women from utilizing learning technologies or engaging in additional training. Due to the predominance of female nurse educators in baccalaureate nursing programs, gender must be considered as a possible factor which has slowed the integration of learning technologies into the teaching practices of nurse educators.

Motivating factors. Unlike the extrinsic nature of the top inhibiting factors identified in these studies, the top motivating factors identified by Schifter (2000) and Betts (1998) appear to be intrinsic in nature. The top five motivating factors for participating educators (n = 38) to engage in distance education in Schifter's study were: personal motivation to use technology; opportunity to develop new ideas; opportunity to improve teaching; opportunity to diversify program offerings; and greater flexibility for students. Even the top five motivating factors for the nonparticipating educators (n = 225) in Schifter's study appear to be intrinsic in nature. The top five motivating factors as rated by participating educators (n = 36) in Betts' study can all be described as intrinsic as well. These factors included: the ability to reach new audiences that cannot attend classes on campus, the opportunity to develop new ideas, a personal motivation to use technology, an intellectual challenge, and overall job satisfaction (Betts). Interestingly, while educators rated intrinsic motivating factors highly, administrators saw extrinsic factors as the primary motivators for educators to participate in distance education (Betts).

The findings of Schifter's (2000) and Betts' (1998) studies have been supported by findings from other research studies. Robinson's (2005) dissertation studied the factors influencing faculty participation in online learning. Robinson utilized a mixed research methodology that combined interviews and surveys. Eleven individuals (administration, faculty, students) were interviewed by Robinson and the data collected from these interviews were analyzed using thematic analysis. The survey utilized in this study was described only as "a modified version of O'Quinn's (2002) 5-point Likert scale survey" (Robinson, p. 36). While no reliability and validity statistics were provided for O'Quinn's survey, Robinson identified the internal reliability of the modified O'Quinn survey used in this study to be 0.75. Robinson found the top motivating factors for surveyed faculty (n = 168, response rate 33%) to participate in online education were: personal motivation to use technology, more flexible work environments, opportunity to develop new ideas for courses, intellectual challenge, the ability to reach learners, and the opportunity to improve teaching. These findings were also supported by O'Quinn's (2002) quantitative study that utilized Betts' questionnaire and by Rockwell, Schauer, Fritz, and Marx (1999) in their mixed research study, supporting the suggestion that those factors which motivate post-secondary educators to engage in online instruction are primarily intrinsic in nature.

Ihrke's (2002) dissertation also has relevance to the discussion of motivating factors, as Rogers' (1995) diffusion of innovation framework suggests important attributes which contribute to the formation of positive (motivating) or negative (inhibiting) perceptions of technology as an innovation. Interestingly, the five attributes suggested by Rogers which form a perception (relative advantage, compatibility, complexity, trialability, and observability) are intrinsic in nature, as are the motivating factors which affect a post-secondary educator's engagement with web-based and learning technologies as well as online learning. Ihrke's study found that the relative advantage was identified as the aspect of perception which most influenced the adoption of technology in the teaching and learning process. This suggests that if nurse educators perceive the educational technology to meet the learning needs of students better than methods currently being used or considered, they will be motivated to adopt that technology.

While much of the literature on the factors affecting learning technology use by post-secondary educators focuses on distance or online learning, the convergence of these findings suggests that factors identified in this research should be taken into consideration when trying to understand how nurse educators perceive the use of learning technology in their own teaching practice. More research is required to explore how pedagogical beliefs of nurse educators impact the use of learning technologies in baccalaureate nursing programs.

Summary of the Literature

Today in nursing education there is a movement toward augmenting "the doing of nursing [with] the thinking behind the doing" (Schaefer & Zygmont, 2003, p. 238). Nursing educators must reflect on their beliefs about teaching and learning and explore a variety of teaching strategies that will enable students to gain the cognitive and psychomotor skills needed to be safe, competent, ethical practitioners who are lifelong learners. Learning technologies are an example of teaching tools that can be incorporated into classrooms to promote the learning environment of students. New teaching tools in today's classrooms include the use of email, the Internet and web, discussion boards, and computer software programs (Christian, 2003; Scollin, 2001). The social reality of nursing is that it must be built on a foundation of human interaction and the real value of learning technologies lies not in the ability to replace the student-educator relationship, but rather to enhance and assist teaching and learning (Kenny, 2000). In addition, nurses must acquire technology skills for safe, competent professional practice in today's complex practice environment.

The literature on the efficacy of learning technologies in assisting students to gain mastery over a skill (Rouse, 2000) is inconclusive. However, several studies within nursing and medicine have found that incorporating learning technologies with the traditional lecture method, or blended learning, produces higher levels of knowledge gains (Bauer, Geront, & Huynh, 2001; Beeson & Kring, 1999; Rouse, 2000). Thus the use of learning technologies and blended learning in baccalaureate nursing education could be said to serve two functions: (1) to prepare nursing students for safe, competent professional practice by regularly exposing them to learning technologies, and (2) to enhance and improve student learning and outcomes in knowledge, psychomotor skill performance, evidence-based practice, and understanding of ethical situations.

Assisting nurse educators to incorporate learning technologies as a teaching and learning strategy is a major challenge—Bandura (1995) suggests that people will avoid activities and environments they feel exceed their personal coping abilities. To assist in integration, we need to understand the factors and perceptions that affect nurse educators' use of learning technology. While research on the utilization of learning technology has focused on post-secondary educators and distance and online learning, it has raised many important points. Factors preventing faculty members from utilizing learning technologies tend to be extrinsic in nature, for example, time, lack of training/skills, and lack of recognition (Betts, 1998; Schifter, 2000: Pajo & Wallace, 2001), while factors motivating faculty tend to be intrinsic in nature, for example, personal motivation, intellectual challenge, improvement of teaching, and overall job satisfaction (Betts; Schifter). Nurse educators as an aggregate of the post-secondary educator population are unique, as women primarily hold faculty roles. Gender has been suggested as a potential, partial explanation for the slow adoption of educational technology into nurse educators' practice.

What we do not know from the work to date is if the motivating and inhibiting factors identified in the research and noted in this literature review apply to the nurse educator population. Also, further research is needed to evaluate the effectiveness of learning technologies in promoting the development of nursing students who can practice as safe and competent practitioners. It would also be useful to explore how nurse educators perceive learning technologies as teaching tools and the factors that encourage or prevent them from using learning technologies in their practice. The aim of this study to is explore the perceptions of nurse educators in order to gain a better understanding of the issues they recognize to be related to their use of learning technologies in nursing education.

Chapter Three

Methods

To explore the research questions of this study, a descriptive, exploratory qualitative design that included focus groups and photographic research techniques was used. This approach was used to obtain an emic perspective of nurse educators' perceptions of learning technologies in baccalaureate nursing programs (Morse & Field, 1995). Data collected was analyzed using thematic analysis as outlined by Boyatzis (1998).

Setting

This study took place in Western Canada, where participants for the focus groups were recruited from a faculty of nursing in a single academic institution in this region. The site serves a large urban population and offers a variety of university and continuing education programs to over 35,000 students each year. In the Winter 2006 term, the selected faculty of nursing had 1325 students enrolled in the various baccalaureate nursing program options offered (Fiona Wilson, Personal Communication, July 10, 2006). The faculty is composed of 90 professors/faculty lecturers, 35 full and part time sessional instructors and numerous part time clinical instructors (Fiona Wilson, Personal Communication, July 9, 2006). The selected faculty of nursing uses a problem-based learning approach to teaching and learning.

Sample and Recruitment

Purposive sampling was used in this study to recruit nurse educators as participants for one of two focus groups which were held at the selected academic institution.

Ethical approval was received by the selected academic institution's Health Research Ethics Board on August 18, 2006. Permission to recruit and hold focus groups at the selected site was obtained by providing a copy of the research proposal and approval from the Health Research Ethics Board to the chair of the Faculty of Nursing. Two focus groups were scheduled for October 10th and 11th, 2006 and three weeks prior to these dates, recruitment sheets were placed in faculty mailboxes and a recruitment email was distributed to all faculty members (Appendix A).

Five faculty members were initially recruited for the October 10th focus group and these individuals were asked to encourage their colleagues to participate in the focus groups. Follow up recruitment ads were placed in faculty mailboxes and sent out via email. In total, 9 faculty members were recruited to participate in this study. Seven nurse educators participated in the October 10th focus group, and 2 nurse educators participated in the October 11th focus group.

Exclusion criteria. Only nurse educators who taught in the baccalaureate nursing program at the selected academic institution were invited to participate in this study. Nurse educators who had taught at the selected site for less than a period of a year were excluded from this study, as it was determined these individuals may not yet be familiar with the learning technologies and supports available.

Data Collection

Two focus groups were conducted. During the focus groups, data were collected using: (a) a demographic questionnaire, (b) photo elicitation techniques, (c) a motivating and inhibiting factors activity, and (d) photo narrative.

Focus groups. As the purpose of this study was to explore the perceptions, beliefs, and values of nurse educators, the use of focus groups was appropriate as a means of "soliciting ideas, thoughts, and perceptions" (Holloway & Wheeler, 2002, p. 110). The goal of a focus group is to "obtain accurate data on a limited range of specific issues within a social context where people consider their own views in relation to others" (Robinson, 1999, ¶ 7). Data obtained from the focus groups was generated from the interactions of group participants as each member shared his or her views and experiences and reflected on the views and experiences of others (Holloway & Wheeler, 2002; Richie & Lewis, 2003).

As the focus group process can have an effect on participants (Kleiber, 2004), it was attempted to create a comfortable, nonintimidating, and accessible environment. To foster this, the focus groups were held at the academic setting of the participants. At the beginning of each focus group participants were provided an information sheet (Appendix B) about the study and it was emphasized that absolute confidentiality could not be maintained within the focus groups. Once the participants had reviewed the information sheets, consent forms were distributed and signed by participants (Appendix B).

Participants were encouraged to engage in open dialogue and to share opinions freely, and advised that they were not expected to disclose information or opinions beyond their comfort level. To facilitate participants' interactions with the moderator and each other, participants were seated around a meeting table. To ensure the focus group discussions were adequately captured, personnel from a local audiovisual company were hired to record the focus group on October 10th, 2006.

Pressure zone microphones (PZM) were placed in the centre of the focus group participants, and using a mixer, sessions were recorded directly onto a computer that was situated in the room. The audio technicians were not present in the room during the focus group session, and were able to monitor the audio recordings during breaks. At the end of the focus group, the audio recordings were saved on a CD and deleted from the audio technicians' computer. On October 11th the focus group was audio recorded on my notebook computer using a microphone and the computer software program Garageband. These recordings were saved on CD and deleted from the notebook. This method of audio recording allowed for hours of continuous recording without interrupting the focus group sessions to reload tape recorders; it also provided an enhanced quality of recording for transcription.

As the investigator in this study, I acted as the moderator for the focus groups. To prepare for this role, I met with a professional focus group moderator (A. Jacox, Personal Communication, April 28, 2006) to develop the focus group moderator's guide (Appendix C) and to receive tips and suggestions for acting in the role of moderator. I also completed the online Graduate Ethics Training program offered by the University of Alberta. Numerous guides and textbooks for focus group moderation were also reviewed (Edmunds, 1999; Morgan & Krueger, 1998). A research assistant was recruited to take notes during the October 10th focus group as well as to review the audio recordings of both focus groups to verify the accuracy of the transcriptions. The research assistant signed a confidentiality agreement (Appendix D). Following the focus group, the research assistant and I spent approximately 30 minutes discussing notes and observations to ensure trustworthiness of the data. In addition, immediately following the focus groups, my thoughts and feelings were captured using a digital voice recorder.

During the focus groups, participants were asked to participate in the following activities:

Demographic questionnaire. Participants were asked to complete a demographic questionnaire (Appendix E). To ensure the privacy of the participants' individual demographic information, envelopes were provided and participants were asked to leave their names off the questionnaires and return them in sealed envelopes. Participants were assured that their demographic data would not be linked to them or any of the comments they made during the focus group.

Photo elicitation. To assist in eliciting discussions, photo elicitation was used in the focus groups. Photo elicitation is the use of photographs to stimulate and guide discussion in the interview process (Harper, 1993; Hurworth, 2003), and was first described in an article by photographer and anthropologist Collier in 1957. The aim of utilizing the photo elicitation technique is to "explore participants' values, beliefs, attitudes, and meanings … to trigger memories, or to explore group dynamics or systems" (Prosser, 1998, p. 124). While there is nothing innately interesting about photographs, they can act as a medium for communication between the researcher and the participant (Clark-Ibanez, 2004). As photographs are polysemic, or "capable of generating multiple meanings" (Clark-Ibanez, p. 1515), they can act as tools to expand upon questions, elicit extended personal narratives, and provide a way for participants to communicate dimensions of their lives, especially when viewed in group settings (Clark-Ibanez).

According to Harper (2002), "while most elicitation studies use photographs" (p. 13) there is no reason why elicitation cannot be done with other visual imagery. In this study, two WebCT courses created and utilized in my own teaching practice were used for photo elicitation. Specifically, I navigated the WebCT courses created for a first year tutorial (classroom) course and a second year community/obstetrics clinical course. From each course participants were shown: the homepage, which outlined the different tools utilized by myself and the students; the Course Materials and Links section which I used to disseminate resources to students; the Discussion Board which allows the students and I to engage in asynchronous communication; the Quizzes section which allows me to post quizzes and self-study modules for students; and finally, the Email section (Appendix F). To promote discussion during the navigation of WebCT courses, I paused to ask participants about their perceptions of the use of this kind of technology in nursing education and their teaching practice; they were also asked what factors they felt would motivate and/or prevent them from using similar technology in the courses they teach.

In a review of the literature, Harper (2002) found 40 studies including dissertations, books, articles, and reports, which used photo elicitation as the primary research method. Disciplines that have used photo elicitation as a research method include anthropology, sociology, education, cultural and ethic studies, medicine, and nursing (Harper, 2005). Clark-Ibanez (2003) used photo elicitation as a stand alone method and in conjunction with ethnography to study two types of elementary schools in South Central Los Angeles. In 2001, Harper conducted a study of the meaning of change in dairy farming in New York. Elderly farmers were presented with historical photographs of farming then asked "to remember events, stories, or commonplace activities that the photos brought to mind" (Harper, 2005, p. 757). The elderly farmers described the mundane aspect of farming, but also explained what it had meant to be involved in agriculture that was "neighbor based, environmentally friendly, and oriented toward animals more as partners than as exploitable resources" (Harper, 2005, p. 757). Photo novella or photo voice, a form of photo interviewing where the photographs are taken by the participants (Hurworth, 2003), was used in a large scale case study by Wang (1999) that aimed to improve the health of participants through empowerment education. After receiving their education, participants were given cameras and asked to take photographs to record their perceived health and work realities (Wang). These photographs were then shared and discussed in a group setting where strategies for promoting women's health emerged (Wang). Wood and Vamplew (1999) used photo elicitation in conjunction with focus groups in a study that aimed to explore the perceptions of people living in two estates (housing projects) in Teesside, U.K. Participants were asked to give their views of regeneration and about their future hopes and expectations. Photographs taken with the residents were used to stimulate discussion in the focus groups. The study found that the most significant problem was the stigma associated with living in the estates and that the residents felt the process of diversification had done little to overcome this stigma (Wood & Vamplew).

Photography has also been used throughout nursing practice and research in a variety of important ways. Riley and Manias (2004) conducted a literature review of the CINAHL database to "identify and provide a 'snap-shot' of the scope and uses of photography in clinical nursing practice and research" (p.397). Riley and Manias identified five broad themes that reflected the different applications in which photography has been applied in nursing. These themes are: documentation and surveillance; therapeutic interventions; teaching, learning and evaluating performance; research method; and descriptive and instructional literature. In nursing, photography has been used in wound management to document and track healing (Swann, 2000) and in neonatal intensive care settings to promote bonding, emotional release, and exploration of personal feelings when mothers and families are separated from their premature or ill infants (Huckabay, 1999; Riches & Dawson, 1998). In nursing education, video recording of simulated patient encounters has served as a means of assessing student nurses' history taking and physical examination skills (Vessey & Huss, 2002).

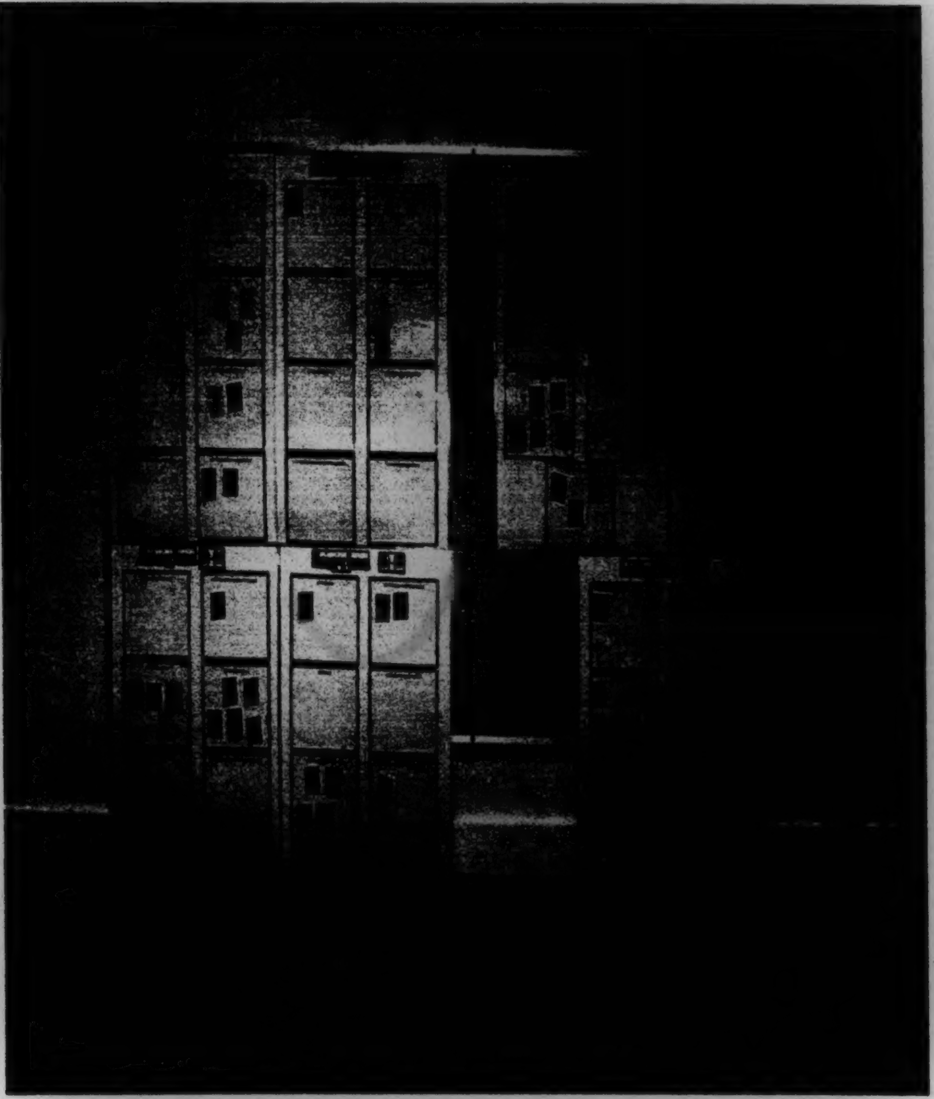
According to Riley and Manias, the most common application of photography in nursing includes "photo elicitation to promote understanding in research" (2004, p.397). From their review of the literature, Riley and Manias found a variety of topics under investigation which utilized photo elicitation techniques. These topics include: identifying types of nurse-patient interaction in which touch is used; understanding the uncertainty experience of women living with breast cancer; enriching the life experience of elderly people; exploring the experience of caring for chronically ill children; and examining the meaning and identifying sources of hope in older adults (Riley & Manias, p. 401). Anderson and Adamsen (2001) adopted the photo elicitation approach to examine nurse-client interactions during cancer therapy. Findings from 142 hours of video recording revealed that nurses spent a quarter of their time with patients and that this time was focused on providing physical care (Anderson & Adamsen).

Hansebo and Kihlgren (2001) used video recordings to capture the interactions of carers with patients suffering from severe dementia. The videos were meant to illuminate the carers' perceptions of their interactions with patients. After providing morning care, the carers met with the investigators to review the video recording. Questions such as "what are your reflections on what you just saw?" (Hansebo & Kihlgren, p. 739) were used to guide the discussion as the video was reviewed. After repeated interviews, an improvement in the carers' abilities to verbalize their reflections and an increase in awareness and knowledge about "their own influence on care quality was seen" (Hansebo & Kihlgren, p. 737). Marck et al. (2006) used "photographic and quantitative survey methods to apply the principles and techniques of restorative science to the study of medication safety issues identified by practitioners and managers of an acute inpatient medical ward" (p. 93) (See http://nursing.ualberta.ca/safersystems). Upon meeting with clinical staff and leaders, a list of medication safety problems was compiled and photographs were taken of all the safety concerns. In focus groups, techniques of photo elicitation were used to elicit further commentary on the original problem list as the photographic images were reviewed. Marck et al. found the ward staff's review of the photographic images during the focus groups "stimulated in-depth discussion of several medication safety issues" (p. 94) and that when the staff reviewed the completed inventory of photographic images they were able to "identify additional system factors requiring modification such as stock list revisions, delivery schedules, and other 'taken for granted' practices" (p. 95). As a result of the photographic research techniques used in this study, the ward staff members were able to debate and create "meaningful narratives of their experience and knowledge of the issues under study" (Marck, p. 95). The ward staff members have since developed a "coaching and clean-up crew" (Marck, p. 95) to address concerns and "strengthen the physical environment for medication administration" (p. 95).

Motivating and inhibiting factors activity. Several studies in the literature (Betts, 1998; Schifter, 2000) have identified motivating and inhibiting factors that affect the utilization of technologies by educators in post-secondary education. These motivating and inhibiting factors were placed on laminated poster boards and hung on the wall of the room in which the focus groups were held. Participants were each given a list of the motivating and inhibiting factors identified in the literature as well as five post-it notes numbered one through five. Participants were asked to reflect on the list of motivating and inhibiting factors and to individually select the five most significant motivating factors for them. They were then asked to identify these factors by placing the post-it notes on the corresponding motivating factors that were hung on the wall. For example, placing the post-it note marked with the number one underneath a factor indicated that this factor was most significant in motivating them to use learning technologies. Participants were then asked to repeat the same procedure for the inhibiting factors. The result was a visualization of the motivating and inhibiting factors that affected participants' decisions to utilize learning technologies in their practice (Figure 1).

Figure 1

Results of Motivating and Inhibiting Factors Activity



Legend:

Color Post-It Note	Significance to Participants
Pink	Factor ranked as #1 Motivating or Inhibiting Factor
Green	Factor ranked as 2nd most Motivating or Inhibiting Factor
Orange	Factor ranked as 3rd most Motivating or Inhibiting Factor
Purple	Factor ranked as 4th most Motivating or Inhibiting Factor
Yellow	Factor ranked as 5th most Motivating or Inhibiting Factor

Photo narrative. Based on group discussions from the photo elicitation and motivating and inhibiting factors activity, photo narrative was used to construct narratives of the use of learning technologies in undergraduate nursing education. Photo narratives "allow participants to tell their stories from their perspectives" (Berman, Ford-Gilboe, Moutrey, & Cekic, 2001, p. 27) and allow for the development of meaningful narratives of the participants' experiences and knowledge (Marck et al, 2006). Marck and colleagues noted that viewing and discussing photographs as a practice community enabled practitioners to first re-story and subsequently restore their care environment (Marck et al.). In this study, participants were asked to reflect on comments made during the photo elicitation activity as well as to look at the results of the motivating and inhibiting factors activity (Figure 1). Participants were then asked how the comments and results made them feel about the use of learning technologies in nursing education as well as to discuss how these comments and results related to their own experiences. Through this reflection it was hoped that participants would "collaborate on the interpretation of experiences and feelings" (Berman et al., p. 27) and develop narratives that were "socially produced through discussions" (Warren, 2003, p. 872).

Data Analysis

The aim of qualitative research is to "capture, portray, and explain" (Richie & Lewis, 2003, p.213), so the researcher must remain very close to the original data. The descriptive data collected for this thesis from the demographic questionnaires filled out by faculty participants was entered in SPSS statistical software and analyzed descriptively. As the raw information collected from the focus groups must be in a form that allows for easy review, the data obtained from the focus groups were transcribed verbatim into Microsoft Word and independently reviewed by the research assistant for accuracy. Participants were not identified by name in the transcripts and names of nonparticipants discussed in the focus groups were removed. As the purpose of this study was to understand the perceptions of nurse educators, a data-driven or inductive approach to thematic analysis was used. According to Boyatzis (1998), thematic analysis has a number of overlapping purposes and can be used as "a way of *analyzing* qualitative information" and as "a way of *seeing*" patterns (p. 4). Thematic analysis has been used in a variety of disciplines such as psychology, sociology, anthropology, political science, economics, biology, and nursing (Boyatzis).

To develop a deep understanding of the data, I read the transcripts several times, making notes in the margins of potential themes. As the data were obtained from focus groups, participants' comments were viewed individually, but also in the context of the focus groups. According to Boyatzis (1998), to assist in the reduction of the data, creating outlines allows for "easier comparison across units of analysis" (p. 69) Accordingly, the units in this study were conceptualized as individual focus group members. Comments from each participant were compiled individually, and an outline or summary of the comments was developed. The next step in the thematic analysis process was to "sense and articulate potential themes" (Boyatzis, p. 86) present in the transcripts and the outlines. A preliminary set of findings was prepared by reading through the transcripts and comparing them with comments or outlines from individual participants. My supervisor independently reviewed the original transcripts first for potential themes and subsequently for preliminary findings. Based on the feedback received from my supervisor, I then returned to the outlines and raw data and continued theme development. Nine themes were developed from the preliminary findings. My supervisor then reviewed the themes, providing feedback and suggestions with respect to clarifying and articulating the themes. Throughout data analysis, I worked closely with my thesis supervisor to receive direction on the themes as they were developed.

The final step in data analysis is to determine the reliability of the themes. Reliability is critical when using thematic analysis as it reflects the "consistency of observation, labeling, or interpretation" (Boyatzis, 1998, p. 144). Interrater reliability, or the "consistency of judgment among multiple observers" (Boyatzis, p. 147) was obtained by having my thesis supervisor continually review the themes I generated.

Rigor

My thesis committee is comprised of three individuals who were highly qualified to supervise this thesis. Dr. Patricia Marck, my thesis supervisor, is an associate professor in the Faculty of Nursing at the University of Alberta. She has experience with the use of learning technologies and flexible delivery in nursing education. She has utilized qualitative and mixed research methods in her practice and has also used focus groups and photographic research techniques. Recently she co-authored an article in the *Quality & Safety Health Care* journal that described the results of a research project that used focus groups, photo elicitation, and photo narrative techniques to study medication safety issues identified by practitioners which has led to her current photographic research in medication safety (see http://goat.ucs.ualberta.ca/saftersystems). The primary expertise of the co-supervisor, Dr. Florence Myrick, is nursing education and pedagogy. She also has experience with qualitative and mixed research methods and the use of focus groups. Dr. Myrick currently sits on the editorial board of the *Journal of International Nursing Education Scholarship*. Dr. Katy Campbell, my thesis committee member, is the Associate Dean of the Faculty of Extension at the University of Alberta. She has extensive expertise in the area of educational technology and learning and instructional design. She is a past president of the Association for Media and Technology in Education in Canada and currently is an associate editor for the *International Journal of Web-Based Learning and Teaching Technologies*.

Several qualitative researchers recommend four criteria for establishing trustworthiness of qualitative data: credibility, dependability, confirmability, and transferability (Holloway & Wheeler, 2002; Polit & Beck, 2004; Speziale & Carpenter, 2003). Credibility refers to the "confidence in the truth of the data and interpretations" (Polit & Beck, p. 430). To enhance credibility of the data, peer debriefing was utilized. As described above, my thesis supervisor reviewed and explored the themes and analysis as they progressed throughout the data analysis process.

For the findings of a qualitative study to be considered dependable, they must "be consistent and accurate" (Holloway & Wheeler, 2002, p. 255). To enhance dependability of this data, an audit trail was maintained of all outlines and themes that were developed during the analysis. An audit trail can also be used to enhance the confirmability of the study's data. Confirmability refers to the "objectivity or neutrality" (Polit & Beck, 2004, p. 435) of the data. Other strategies taken to enhance the confirmability of the data in this study included: keeping copies of all raw data, including digital voice recordings on CD-ROM and field notes; making backup copies of digital voice recordings; and keeping hard (printed) copies of raw data and theme analysis as they developed. These materials were stored in a combination locked safe.

The last criterion for establishing trustworthiness of qualitative data is transferability. While by nature, qualitative data is not generalizable to other populations or settings, transferability of data with respect to trustworthiness refers to the "responsibility of the investigator … to provide sufficient descriptive data in the research report so that consumers can evaluate the applicability of the data to other context" (Polit & Beck, 2004, p. 435). To enhance transferability, a rich description of the study participants' backgrounds as nurse educators is provided in Chapter Four.

Ethical Considerations

Several ethical measures were taken to conduct this study. First, ethical approval was obtained by the Health Research Ethics Board at the selected academic institution prior to commencement of this study. Second, nurse educators participating in the focus groups were asked to complete written consent forms, and were advised that participation was entirely voluntary and that they could leave at any time with no implications for their employment. While absolute confidentiality within the focus groups was not possible to maintain, participants were cautioned about the importance of respecting the confidences of fellow participants.

Participants' privacy was maintained in several ways. First, demographic data were collected anonymously and complied and summarized as an aggregate. Second, the results of data analysis are presented as themes in Chapter Four; participants are not linked in any way to their comments made during the focus groups. Only my thesis advisor, the research assistant, and I have access to the audio recordings and the transcripts. As requested by the Health Research Ethics Board, all audio recordings and transcripts will be kept for a period of seven years (C. Kabatoff, Personal Communication, June 26, 2006) following the completion of the my thesis and are currently being kept in a combination locked safe. Hard copies of the transcripts, as well as back-up copies of data related to this study, will be kept in this locked safe for the same period of time. While quotes from the focus groups may be selected for use in public, all identifying information has been removed from the transcripts.

My supervisory committee and I were not aware of any significant discomforts or risks associated with participation in this study. Group rules were established and maintained throughout the focus group sessions, and it was made clear to the nurse educators participating in this study that they were free to stop and leave the focus group at any time. As every focus group requires some form of participant self-disclosure, there is a risk of over-exposure, or regret on the part of the participant about revealing too much information (Morgan, 1998). To minimize the potential for this situation, the introduction to the focus groups included a discussion reminding participants that their contact with each other would continue after completion of the focus groups; it was suggested that the group make its own ground rules for protecting privacy.

completion of the focus groups; it was suggested that the group make its own ground rules for protecting privacy.

Finally, I have a passion for the use of learning technologies such as WebCT in nursing education. Therefore, I pa[illegible] very close attention to the types of questions and statements that were made during the focus group to avoid introducing bias into the group, as well as to avoid making focus group participants feel less competent if they currently do not use learning technologies such as WebCT in their teaching practice.

Chapter 4

Findings

Demographic Information

Nine nurse educators participated in this study. Here is a summary of the participating nurse educators' demographic information and professional background:

1. Of the 9 participants, 7 were female and 2 were male.
2. The mean participant age was 51 years with the range of 26 to 61 years.
3. Five participants described themselves as being faculty lecturers, 3 described themselves as sessional instructors, and 1 participant describe herself as having an "other" position.
4. The mean number of years for teaching within the selected faculty of nursing was 6.78 years with a range of 2 to 11 years.
5. The mean number of years for teaching baccalaureate nursing students was 8.22 years with a range of 2 to 23 years.
6. Seven of the participants described themselves as being employed full-time by the selected faculty of nursing, while 2 participants described themselves as being employed part-time.
7. Five participants described themselves as having primarily clinical teaching responsibilities, while 3 participants said they taught clinical and tutorial courses equally; 1 participant described herself as teaching primarily clinical courses.

8. Of the 9 participants, all have bachelor's degrees while 4 currently hold graduate degrees, and 4 are currently working on graduate degrees. A breakdown of participants' credentials is provided in Figure 2.

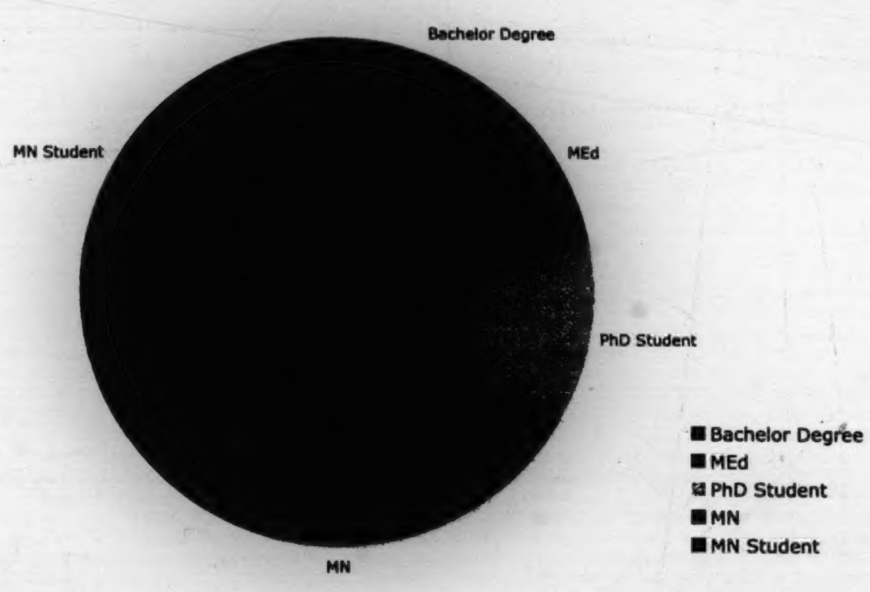


Figure 2: Academic Credentials of Study Participants

Themes

Analysis of the data revealed five major themes. This discussion will focus on identifying the themes, related findings, and narrative quotes from the focus group sessions.

Theme One

The first theme identified from the study suggests that *participants see learning as occurring through a collaborative educator-learning relationship where* *educators are not content experts, but rather facilitators who are concerned with the processes of learning.*

Throughout the focus group sessions, the participants consistently referred to themselves as facilitators of learning. Rather than describing themselves as content experts, the participants stated that they focused on their roles as facilitators who were "making sure [they were] creating the right kind of learning opportunities" for students. The participants also described the learning process as collaborative and student-centered. One participant noted, "I use the term facilitator as well. My expectation is that the student has a life experience to bring as does the instructor, you know, it's a sharing of information."

The collaborative relationship appeared important to the participants for two reasons. First, the context-based learning approach to teaching and learning utilized by the selected faculty of nursing requires students to be active participants in their learning, not passive receivers of knowledge. As the participants viewed themselves as facilitators of learning, they also saw their role as providing guidance to students in the learning process. One participant commented "we have to lead the horses to the water but they have to drink themselves." Being "approachable" was seen as important by the participants in enhancing the learning environment of students. One participant described her role as "more of a sounding board" for students. Second, the participants concurred that "nursing is about people." In discussions about the use of learning technologies such as WebCT some participants shared their concern that nursing education is moving into the online environment where collaboration between educator and learner may be diminished. One participant noted that she had "some concerns about … using too much in the way of WebCT, and not getting that face-to-face … I wouldn't want to see it taking the place of face-to-face instruction." Another participant shared her thoughts by suggesting "I think there has to be a balance. And that it [technology] can't, you can't let it be *the* medium. Nursing is about people. So we have to maintain that personal, you know, keep personal attention and connection."

Theme Two

Participants of the focus groups were asked to identify the learning technologies they knew of or had experience with (Appendix G). Discussion of the identified learning technologies led to the next theme: ***When considering the use of learning technologies in undergraduate nursing education, participants consider the appropriateness of the learning technology to the setting and to the student population.***

The appropriate use of learning technologies was of particular concern for participants. Many shared their experiences with the presentation software PowerPoint and debated the usefulness of this software program to the learning of nursing students. Concerns about student use of this software were noted with 1 participant stating that PowerPoint was:

> a very good tool to use in a large session to keep people on track of what you are discussing … But when we see students using it to present their case studies to a group of 6 or 7 students—to me that is an inappropriate use of PowerPoint.

Numerous participants recalled experiences in which students unsuccessfully attempted to utilize technologies to present content to their peers. Some participants described discouraging students from using PowerPoint and other technologies, telling their students "that high tech is not expected." Rather, participants described wanting students to focus on the "quality of ideas [they were] putting across." The use of PowerPoint by nurse educators was also discussed and it was identified that the participants had used PowerPoint in a variety of settings and for a variety of purposes. Participants debated how nursing students perceived the use of PowerPoint in their education. While some participants felt that this form of technology use was well received by students "because they are all [using it]," others felt that students "[don't] like bells and whistles … and don't need to be entertained." One participant suggested that perhaps nurse educators felt inclined to use presentation software such as PowerPoint as a way of "teaching to test [because] we have to have given the students this information that they can refer to and its gonna be on the exam."

The photo elicitation technique brought forth participants' concerns about the accessibility of technology for the nursing student population. In particular, concerns were raised about how the use of learning technologies such as WebCT may disadvantage certain students. It was noted that the selected faculty of nursing had not yet made computers a requirement for the program. As access to WebCT is dependent upon a computer and Internet access, participants shared concern that students with decreased access to computers or high-speed Internet connections may be unfairly disadvantaged by the use of this learning technology. One participant questioned, "[say] they are just scraping by with their old computer and they can't really afford a high speed Internet connection, are they going to suffer for not being able to get on WebCT?" While some participants raised concerns about the accessibility of technologies to the students, others were concerned about the computer skills of their students. For example, it was noted that in particular baccalaureate completion programs offered by the selected faculty of nursing, "students [were] coming back in their forties and fifties that really did not have the computer skills."

From the focus group discussions it is clear the participants are considering the pedagogical implications for use of particular learning technologies and are also reflecting on the characteristics of the student population when considering implementation of a learning technology such as WebCT.

Theme Three

Throughout the focus group discussions, participants shared their own experiences with learning technologies. From these discussions, the following theme clearly emerged: *Time, resources, and training are important factors in participants' use of learning technologies.*

Participants remarked that within the selected faculty of nursing there had been recent pushes for the integration of learning technologies such as WebCT and simulation technology into courses throughout the program. While participants described this processes as chaotic and it made them feel like they were "jumping right into the deep end," participants maintained they were satisfied overall with the quality of support they were offered by their technology personnel. One participant noted "our [flexible delivery coordinator] was wonderful, I mean we have support in place with her and the rest of our computer people where they were really helpful."

Despite this overall satisfaction with the quality of support they were receiving, participants consistently emphasized the need for more technology and computer support, particularly as the selected faculty of nursing was pushing for integration of learning technologies across all years of the program. One participant felt that "the [flexible delivery coordinator] is limited with how much she can support each person in establishing their needs" and another participant commented, with agreement from others, that "about 10 [flexible delivery coordinators]" were needed.

Many participants cited a lack of direction from the administration with respect to the integration of learning technologies within courses. One participant felt they had "never actually heard the faculty say 'thou shall use this, or we would really like [you] to.'" Rather, the participant describes getting the message "sort of between the lines." Other participants described being given a workload that incorporated a WebCT component without prior consultation from [illegible]e faculty. Many participants described situations in which they "had to go find out all about [WebCT], phone someone, get an orientation" and described feelings of frustration over this process. One participant remembered thinking "ahhh, I haven't got a clue and this is some kind of super technology, I am a fossil." Other participants described their experience of learning how to use simulation technology as "enormously stressful … [because] I feel like an idiot not knowing how this technology works." It was clear from the participants of this study that there is a desire for the faculty to articulate the direction they would like to take with respect to learning technologies such as WebCT and simulation technology and to provide the necessary formal training. One participant summarized this issue nicely by saying "I guess for me, if [the faculty] wanted to me to get into new stuff in a big way, you know like at orientation days … I like to be able to sit down with other people and get orientated to it just like you would anything else."

Another major concern for participants relating to the integration of learning technologies into their teaching practice was the issue of time. Throughout the focus group sessions the issue of time was consistently raised as a preventative factor in implementing and exploring learning technologies. In fact, lack of release time was the most significant inhibiting factor for participants during the Motivating/Inhibiting Factors Activity (Figure 4, Table 2). Participants had several concerns about the issue of time. First, participants described the importance of preparation for teaching a course. Participants noted that teaching workloads were often given out close to the start date of a course, leaving little time for preparation of course materials let alone time for designing and implementing learning technologies such as WebCT. One participant stated that it was "terrible to go through the summer and not know what you're teaching." It was suggested that "if the faculty could figure out who was teaching in August then it would be better," while others suggested they would "prefer June." Regarding the issue of lack of release time provided to the faculty for training, development, and implementation of learning technologies, one participant noted, "you can't roll something out without having prepared … there needs to be some recognition that you can't be doing other things because you need to be doing this [learning to use learning technologies]." This comment also relates to the perceived lack of direction by the faculty with respect to their desire for learning technologies to be integrated into courses offered.

Another significant concern for participants was the impact the integration of learning technologies into courses would have on their already "heavy" workloads. Time to learn how to use technology was a significant inhibiting factor also identified by participants during the Motivating and Inhibiting Factors Activity (Figure 4, Table 2). In addition to a perceived lack of release time provided by the faculty to learn how to use technologies, participants described a fear that workloads were always increasing. Participants "fear that it's more time … and that it would always be more time" and that it felt as though "there is another spoonful [of work] coming on your plate and never one coming off." These feelings and the issue of workload relate significantly to the discussion about the lack of release time participants felt they were given to learn and utilize learning technologies in their practice.

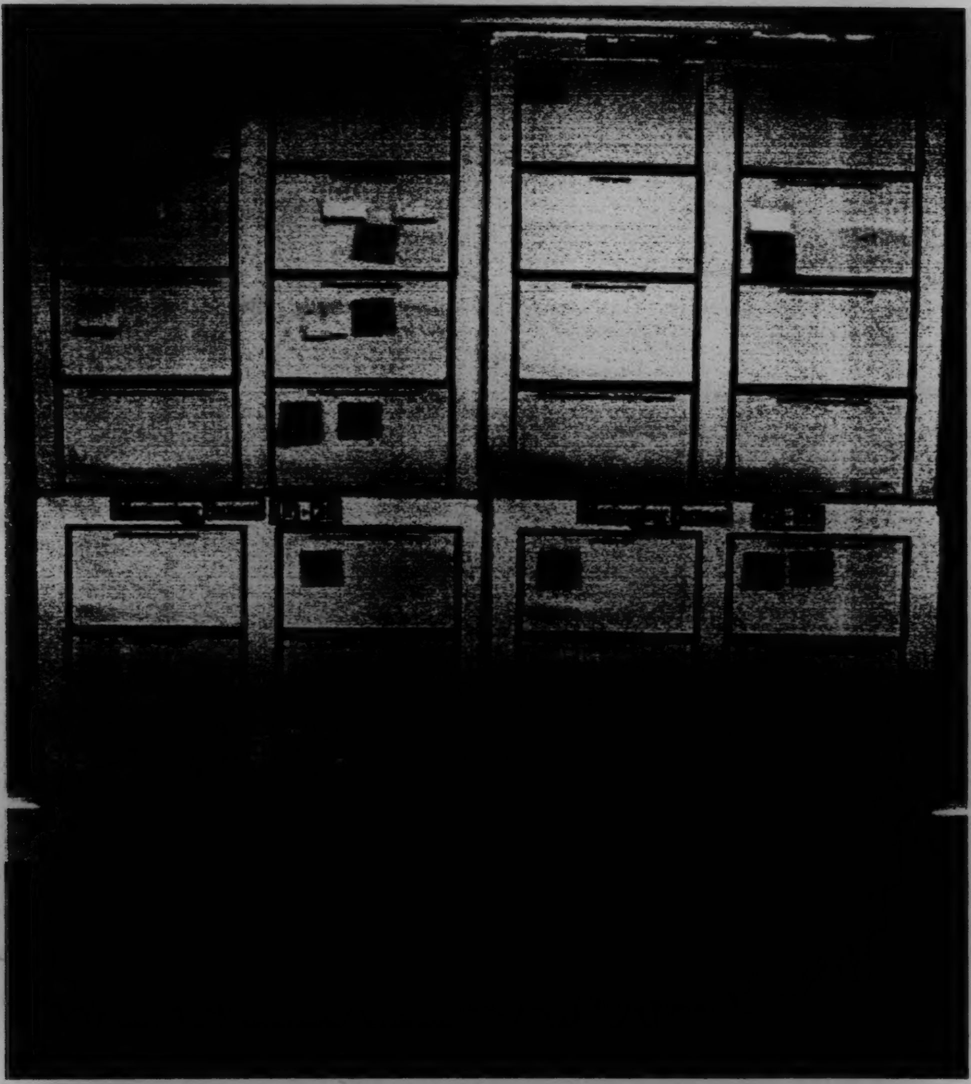
It is clear from the focus group discussions, as well as from the Motivating and Inhibiting Factors Activity results (Figure 1, 3, & 4; Table 1 and 2) that issues related to lack of time, resources, and training are significant factors affecting participants' ability and desire to utilize learning technologies in their practice.

Theme Four

Overall, participants felt there was potential for the use of learning technologies in the undergraduate nursing program. However, they expressed that *for participants to use learning technologies: (a) there must be a perceived benefit to student learning, and (b) the learning technology must be easy to learn and efficient to use.* Using photo narrative, participants were asked to reflect on the WebCT demonstration and the results of the Motivating and Inhibiting Factors Activity and to

Figure 3

Motivating Factors Identified By Participants



Legend

Color Post-It Note	Significance to Participants
Pink	Factor ranked as #1 Motivating Factor
Green	Factor ranked as 2nd most Motivating Factor
Orange	Factor ranked as 3rd most Motivating Factor
Purple	Factor ranked as 4th most Motivating Factor
Yellow	Factor ranked as 5th most Motivating Factor

Table 1

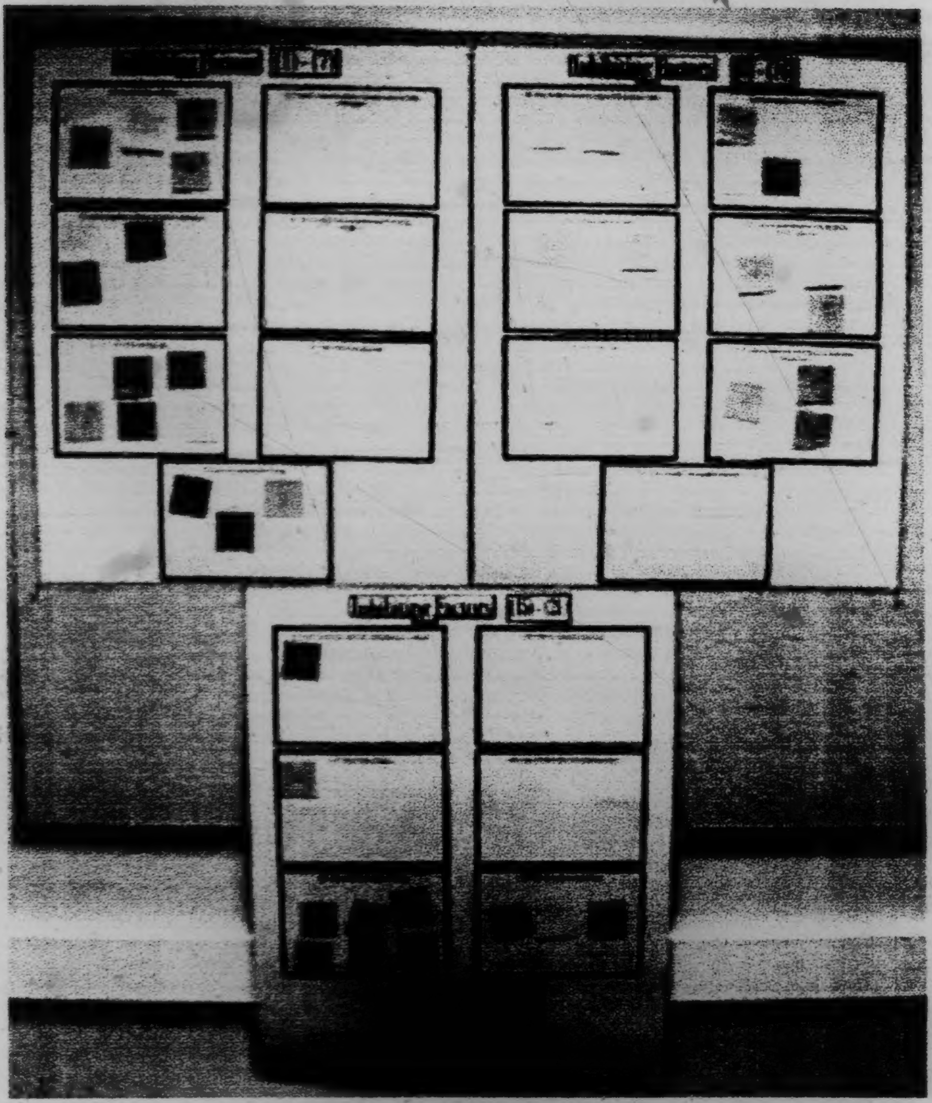
Factors Which Would Motivate Participants to Utilize Learning Technologies

Participants were asked to rank their top 5 motivating factors, with 1 being the most significant motivating factor.

Motivating Factors	Participants Ranking of Factor
1. Personal motivation to use technology	1,1,5
2. Graduate training received	
3. Opportunity for scholarly pursuit	2,5
4. Reduced teaching load	3,5,5
5. Opportunity to use personal research as a teaching tool	5
6. Requirement by department	4,5
7. Support and encouragement from dean or chair	
8. Working conditions (i.e. hours, location)	4,4
9. Increase in salary	4
10. Opportunity to influence social change	
11. Job security	
12. Monetary support for use (i.e. stipend, overload)	4,5
13. Expectation by university	
14. Opportunity to develop new ideas	
15. Visibility for jobs at other institutions/organizations	
16. Professional prestige and status	
17. Grants for materials/expenses	
18. Support and encouragement from colleagues	4
19. Intellectual challenge	2,2,3,5
20. Overall job satisfaction	1,3,3,3,4
21. Course assignments	2,4
22. Technical support provided by faculty/institution	
23. Career exploration	
24. Credit toward promotion and tenure	5
25. Release time	1
26. Training provided by the faculty/institution	1,3
27. Merit pay	
28. Royalties on copyrighted materials	
29. Greater course flexibility for students	2,2,3,3
30. Opportunity to diversity program offerings	3
31. Recognition and awards	
32. Opportunity to improve my teaching	1,1,1,1,2,2,4
33. Support and encouragement for faculty administrators	2

Figure 4

Inhibiting Factors Identified By Participants



Legend

Color Post-It Note	Significance to Participants
Pink	Factor ranked as #1 Inhibiting Factor
Green	Factor ranked as 2nd most Inhibiting Factor
Orange	Factor ranked as 3rd most Inhibiting Factor
Purple	Factor ranked as 4th most Inhibiting Factor
Yellow	Factor ranked as 5th most Inhibiting Factor

Table 2

Factors Which Would Inhibit Participants From Utilizing Learning Technologies

Participants were asked to rank their top 5 inhibiting factors, with 1 being the most significant inhibiting factor.

Inhibiting Factors	Participants Ranking of Factor
1. Concern about workload	3,3,3,5
2. Negative comments made by colleagues about web-based technologies	
3. Lack of training provided by the faculty/institution	1,1,4,5
4. Lack of support and encouragement from nursing colleagues	
5. Lack of release time	1,1,2,4,5
6. Lack of professional prestige	
7. Lack of technological background	1,1,3
8. Lack of support and encouragement from dean or chair	5
9. Lack of grants for materials/expenses	1,2,5
10. Concern about quality of courses	2,2
11. Lack of technical support provided by faculty/institution	2,3,5
12. Lack of merit pay	
13. Lack of support and encouragement from faculty administrators	3,4,4,5
14. Lack of royalties on copyrighted materials	
15. Lack of monetary support for participation (i.e. stipend, overload)	1
16. Lack of recognition and awards	
17. Lack of salary increase	3
18. Lack of credit toward tenure and promotion	
19. Time to learn how to use technology	2,2,3,3,4,4
20. Time required to use technology	2,4,5
21. Lack of resources	1,2,4,4

talk about their feelings about the use of learning technologies in the program. One participant noted "I feel positive. I do. I've really seen some big advantages in some of the things I've done [with technology] with my own students, and the potential." Other participants agreed with the potential they felt could be seen in the use of learning technologies saying, "[I feel] excitement because there is so much potential." In fact, the most significant motivating factor identified by the participants through the Motivating and Inhibiting Factors activity was the opportunity to improve one's teaching (Figure 3, Table 1). This suggests that the ability to improve teaching and therefore enhance student learning is an important factor when participants consider using learning technologies.

However, many participants pointed out that their lack of understanding of learning technologies made it difficult to conceptualize how technologies such as WebCT could be utilized. For example, after the photo elicitation exercise where a demonstration of WebCT was given, a participant commented "I think that the WebCT the way you have presented it is something we could us for our courses" but another participant added that due to "[my] own lack of technology, I can't really think of it myself." While participants appear motivated to use technology "for the right course and the right reasons" and believe there is potential in using learning technologies, their lack of understanding about how learning technologies can be used inhibits them from using learning technologies such as WebCT.

Participants shared several stories that described their experiences with learning technologies. For example, participants described being motivated to use a learning technology when it assisted them in achieving a particular teaching or learning goal. One participant shared her experience of incorporating a web-based component to the course she taught:

> I used a web-based component and part of the reason for doing it was my group of learners were practicing nurses preparing for certification. As many of them in their field of nursing had not had the opportunity to use technology very much and to become familiar with resources that were available on the Internet, nor how to determine if those resources were credible or not ... By using that web-based component I was able to help direct their learning on how to access good information on the Internet, and I have quite a few converts now ... that will continue to use [the Internet] in their nursing practice.

Another participant described purchasing her own PDA on which he downloaded drug guides, heart sounds, and other pertinent nursing software as he found it enhanced student access to credible information in the clinical setting. For 1 participant, the benefit of using learning technologies such as simulation was the "[creation of] rich learning experiences," and went on to explain:

> I can give you one hour [in the simulation lab] and you are going to know the inside out of a blood reaction, transfusion reaction in the simulation lab, versus watching a patient on the unit get blood, who tickity-boo, nothing happens. On the [clinical] unit you are going to know what is normal. In the lab I can create, you will know what is normal and you are going to know what is abnormal, and you are going to know what to do when it is abnormal.

Other participants noted they discovered the benefits of technologies from their students. One participant described observing increased numbers of students bringing laptop computers to tutorials so that they could "read the research while they were talking with their classmates." While the participant was initially concerned "that there was going to be a barrier between [the student] and the rest of the class," she found the laptop computer was not a barrier at all. Instead the participant described "feeling pushed that that might be a route to go" for nurse educators as a way to make their jobs more efficient.

In discussing the current level of use of learning technologies with the participants it appears that the perceived benefit of a learning technology alone is not enough for participants to select it for use. If the learning technology is difficult to learn or inefficient to use, participants are demotivated to use it, despite the perceived benefit to student learning. A prime example of this from the focus groups was related to the multiple steps taken by participants to gain access to and develop a WebCT section for their students. One participant described her experience of trying to set up a WebCT section:

> My biggest problem with WebCT here is that I don't have control of my course … I'm not in control of what I put on that course … I can get [the authority to do that] but I don't have it. It should be automatic me getting it. It shouldn't be me making 20 calls and waiting for someone to respond. As an instructor, I should have the ability immediately to create my own WebCT for my students … being on the phone with 10 people and leaving five messages, it just doesn't work for me. I don't have the time or patience to do that at the

> end of the day … I don’t use WebCT for my courses because I don’t control what goes on there.

Another participant validated this experience by sharing her experience:

> Right now I find that too. This (WebCT) is a brilliant technology and if I were teaching, even a different kind of course where I was around a computer more, I could see using it more. But to get this taken off, or this article put on there, I have to talk to a coordinator who talks to so-and-so, and then I have to check that [it] has been [added] afterwards. And sometimes I think, ahh, it would be easier to do it some kind of old fashioned way.

A fellow participant shared these views and added “it is easier to photocopy it and say here is your article.”

While Theme Three identified time, resources, and training as important factors affecting participants’ use of learning technologies, it is clear from the participants’ discussions that the selected learning technologies must enhance the learning experience of students and be efficient to use regardless of the release time and training provided.

Theme Five

An overriding theme from the focus groups is that *participants recognize their level of knowledge of learning technologies needs to be enhanced.* First, the participants described themselves as “experiential learners” with respect to technology. While some participants described attending computer classes provided by the selected academic institution, there was agreement among participants that they learned how to use technologies primarily through “trial and error.” All participants identified having access to a computer at work, while 8 of the 9 participants described having access to computers at home. When asked to describe their level of skill with a computer the responses were "confident" (2 participants), "satisfied" (2 participants), "comfortable" (2 participants), and "uncomfortable" (1 participant). One participant expanded on her comment by adding "I'd say I am confident with my level of skill with a computer but I do know that I only learn what I have to do with it." Participants added that they learned how to use technology only as they needed and admitted they were unlikely to explore a learning technology they were not going to use or have access to in their teaching practice. Another participant built on this statement by adding "there is stuff to learn yet but you learn it as you need to use it."

One participant commented on the digital divide suggesting:

> I think it makes sense for use to be able to learn them [technologies] as most of our students, I would not say 100%, but most of our students are in the age group that are VERY familiar with them. So if we are not able to use some of those technologies we are not as connected to the students as we would like to be.

Other participants have suggested "a lot of what [they] have learned [about technology] has been from the students." The discussions indicated the participants' willingness to learn more about learning technologies.

Motivating and Inhibiting Factors Activity Results

Participants were asked to review lists of factors that were found to either motivate or inhibit post-secondary educators' utilization of technologies in their teaching practice. Each participant was then asked to select the top five factors that would motivate them to use learning technologies and top five factors that would prevent or inhibit them from using learning technologies.

Motivating Factors

Factors identified by the 9 participants as the most significant (number 1) motivating factor included: personal motivation to use technology (2 participants), overall job satisfaction (1 participant), release time (1 participant), training provided by the faculty/institution (1 participant), and opportunity to improve teaching (4 participants).

Other motivating factors ranked highly by the participants included: greater course flexibility for students, intellectual challenge, and reduced teaching load.

Inhibiting Factors

The most significant (number 1) inhibiting factors for the 9 participants were: lack of training provided by the faculty/institution (2 participants), lack of release time (2 participants), lack of technological background (2 participants), lack of grants for materials/expenses (1 participant), lack of monetary support for participation (1 participant), and lack of resources (1 participant).

The participants also repeatedly identified three other inhibiting factors which they considered to be significant. Time to learn how to use technology was ranked as a top five inhibiting factor by 6 of the 9 participants. Concern about workload and lack of support and encouragement from faculty administrators were both identified as a top five inhibiting factor by 4 of the 9 participants.

For a detailed listing of how participants ranked the motivating and inhibiting factors, please see Figures 3 and 4 and Tables 1 and 2.

Discussion

The purpose of this study was to increase our understanding of how nurse educators in one baccalaureate nursing program in Western Canada felt about learning technologies as teaching tools and to explore their perceptions of the integration of learning technologies within the context of their teaching approach. It is my hope that the findings in this study will expand and contribute to our knowledge of how nurse educators see themselves using learning technologies in their pedagogy. A descriptive, exploratory, qualitative design that included a focus groups and photographic research techniques was used to obtain an emic perspective of the participating nurse educators' perceptions of learning technologies in a baccalaureate nursing program. The findings indicate that the participants in this study value collaboration in nursing education and, while they see potential in the use of learning technologies, their main focus is on "creating the right kind of learning opportunities" for students. The findings also indicate that the participants recognize the need to further their knowledge and skills with various learning technologies but identify lack of time, resources and training as major preventative factors in their uptake of learning technologies.

In this chapter I (a) attempt to answer the research questions, (b) explore the implications of the findings in the context of pedagogy and nursing education, (c) discuss the limitations of the study, (d) suggest further research, and (e) summarize the results.

Research Questions

The overall research question for this study was: What are nurse educators' perceptions of the integration of learning technologies within the context of their teaching approach in undergraduate nursing education? The related research questions explored:

- How do nurse educators' use learning technologies in their teaching?
- What do nurse educators perceive as being supportive in their use of learning technologies in their teaching?
- What do nurse educators perceive as inhibiting their use of learning technologies in their teaching and what supports are important to their adoption of learning technologies in their teaching?

Before an attempt to answer the overall research question for this study is made, the related research questions are addressed.

Nurse Educators' Use of Learning Technologies

Participants taking part in focus group sessions were asked to describe what learning technologies meant to them. While some participants were able to define learning technologies, for example, as "a tool that [is] used that is not just based in knowledge but is an actual physical entity that [we] can manipulate, play with, learn from," others were able to provide concrete examples such as computers, and WebCT. Participants were also asked to identify learning technologies they were aware of (Appendix G) and had used. The experience of participating nurse educators differed greatly. While some participants described significant experience working with learning technologies such as WebCT and simulation, other participants focused their discussion on the use of learning technologies by students. Learning technologies were described as being used for several purposes. For example, WebCT was discussed as being used throughout the nursing program at the selected academic institution for a variety of purposes. One participant described using WebCT to provide an entirely online course. Other participants described WebCT as being used to facilitate students' access to resources, to enhance communication, and to reduce photocopying costs. Other learning technologies such as high-fidelity simulations were used to create "rich learning experiences" to enhance theoretical concepts and to prepare students for clinical experiences. One participant described using a PDA in the clinical setting to facilitate students' access to credible and timely resources.

While it is clear that the participants used learning technologies when there was a perceived benefit to student learning, there were also situations in which the participants had concern about the use of such technology. The participants were consistent in their belief that learning in nursing education occurs through collaboration between the educator and learner, as well as among the learners themselves. They clearly believe that nursing is about people and that the relationships formed between educators and learners are essential. Therefore, it is not surprising that the participants did not want to use learning technologies if they would diminish in any way the contacts between educator and students or among students.

Supportive and Preventative Factors Affecting Learning Technology Use

The motivation of nurse educators to use learning technologies is affected by their perceptions of the pros and cons of these technologies. This project has been an attempt to delineate factors that may support or prevent uptake by educators of learning technologies. My results provide an understanding of both supportive and preventative factors and how these factors interrelate.

A significant finding from this study was the desire of the participants to receive clear direction from administration with respect to the integration of learning technologies throughout the program. Participants perceived that the faculty had a desire to increase the utilization of learning technologies such as WebCT and simulation in courses across the program. However, as described in Chapter Four, the necessary time, resources, and training to integrate learning technologies into nursing courses were not seen as available to the nurse educators taking part in this study. For example, the participants commended the quality of support they received from the technology staff within their faculty, but they also described themselves as under resourced, specifically with respect to technology support. When asked how they learned to use computers, the participants described a trial and error process. However, as they felt an impetus for the increased use of learning technologies across the program, a desire for formal training was identified and participants suggested having orientation days to introduce and provide training for various learning technologies. Thus, while the participants described themselves as comfortable with their computer skills, they were candid in explaining that they learned new technology only as the need arose. It was clear from the discussions that the participants felt pressed to increase their use of learning technology in their teaching practice and desired further training to do so.

However, with recognition that participants need more training to integrate learning technologies into their teaching practice came understanding that training requires time. The issues of insufficient time and high workload were significant to the participants. When participants were asked to review and identify the factors that were most significant in preventing them from utilizing learning technologies, they identified: lack of release time, lack of training provided by faculty/institution, lack of technological background, and lack of time to learn how to use technology. Interestingly, these factors were also consistently identified in the literature as most significantly inhibiting post-secondary educators' use of learning technologies (Betts 1998; Pajo, & Wallace 2001; Schifter, 2000). The participants felt there was a lack of recognition with respect to the amount of time it takes to prepare for a course. One participant noted that administration needed to realize that learning to use and implement learning technologies takes time and resources and that workloads should be adjusted accordingly. The participants perceived that their workloads were always increasing. Due to lack of formal training, and the perceived lack of recognition for preparation, the participating nurse educators were concerned that the use of learning technologies in their teaching practice would only add to their workload. The participants speculated that if the administration clearly outlined a goal for the integration of learning technologies throughout the program, formal training and workload adjustments might follow.

Since the participants identified the primary preventative factors for the use of learning technologies to be time and training, one could assume that their primary motivating factors would be release time and increased availability of training. However, when the participants were asked to review and identify the factors that were most significant in motivating them to utilize learning technologies, they identified: the opportunity to improve teaching, personal motivation to use technology, overall job satisfaction, and intellectual challenge. Like the preventative factors identified by the participants, these motivating factors were also identified in the literature as factors significant in motivating post-secondary educators to use learning technologies (Betts 1998; Robinson, 2005; Schifter, 2000). As noted in the earlier review of the literature (Chapter 2), factors that motivate participating nurse educators in this study to use learning technologies appear to be intrinsic in nature, while preventative or inhibiting factors appear to be extrinsic in nature. This is an important observation to consider when exploring what supports nurse educators need to employ learning technologies in their teaching practice.

Supports Needed to Adopt Technologies

As both extrinsic and intrinsic factors were identified by the participants as important considerations in their adoption of learning technologies, it is clear that nurse educators require more than simply time and training to establish a use of learning technologies. They also require support to help them understand the pedagogical implications of how learning technologies may facilitate their teaching and improve student learning. During the discussions, participants described being motivated to use learning technologies when they felt it improved their teaching and enhanced student learning. For example, one participant described incorporating a web-based component in the course she was teaching to facilitate students' understanding of online resources and their credibility. However, the participants also identified that they lacked the knowledge to understand how learning technologies could be used. An example of this occurred after the participants were shown WebCT courses I developed to supplement face-to-face interactions in the clinical and classroom setting. After viewing my integration of WebCT, participants realized that because of their "own lack of technology" they could not visualize for themselves how a WebCT course might look in their own clinical courses. However, after seeing the WebCT demonstration, another participant commented that it was "something we could use for our courses."

Supports to facilitate the integration of learning technologies into practice by nurse educators, therefore, cannot solely be focused on overcoming the inhibiting factors. Eliminating the preventative factors will not guarantee that the uptake of learning technologies by nurse educators will increase. For example, offering formal training sessions and adjusting workloads to reflect the time and effort it takes to train and utilize learning technologies will not be sufficient if the nurse educators are not motivated to use learning technologies. Supports must motivate nurse educators by focusing on the pedagogical implications of using learning technologies and demonstrating how the use of learning technologies can improve teaching and learning outcomes. For example, rather than supporting a nurse educator to learn how a technology works and focusing on technology skills acquisition, supports should focus on identifying common teaching issues and hurdles and developing ways in which various technologies may assist nurse educators' in solving these issues. By doing so, the focus is not on technology but rather on assisting nurse educators to explore sound pedagogical strategies for teaching issues.

Perceptions of Integration of Learning Technologies in Teaching Practice

In this section I will address the overall research question: What are nurse educators' perceptions of the integration of learning technologies within the context of their teaching approach in undergraduate nursing education? Throughout the discussions, the participants spoke about the potential of learning technologies in nursing education. Many of the participants, graduate students themselves, described the benefits they received as students from the use of WebCT. Many participants also professed a motivation to explore various technologies. In the following section technology integration is discussed in terms of its perceived impact on the nurse educators in this study and the impact perceived by participants of this study on student learning.

Perceptions of Impact on Nurse Educators

Participating nurse educators clearly articulated their concerns that the integration of learning technologies would take time which they felt they did not have and would add to a workload which was already abundant. However, since participants felt there was a benefit to student learning, they indicated a desire to have more training if workloads were adjusted to reflect the time and effort required for learning and utilizing learning technologies. Many participants described the current process of technology integration in their faculty as "chaotic." However, they did note several ways in which technology integration was making their jobs more efficient. For example, one participant described purchasing a PDA that allowed him to "multi-task" and provide students with immediate access to credible information in a clinical setting. Other participants identified how the use of WebCT made dissemination of information to students more cost-effective and efficient.

From the focus groups it was clear that the problem-based learning approach used by the nurse educators in this study had a significant effect on the way the participants perceived learning technologies. Problem-based learning is essentially student-centered; typically, learners and faculty members work through presented problems in small groups (Rideout, 2001). It therefore not surprising that participants were concerned that learning technologies such as WebCT might diminish the amount of face-to-face contact between educator and learners, and among learners. The self-directed nature of problem-based learning is considered a strength of this approach. Nurse educators in this study frequently described using learning technologies in a way that would promote self-direction. For example, participants described posting resources and activities on WebCT that would allow students to prepare for learning experiences. One participant described using a web-based component in a course to facilitate students' understanding of online resources.

Another significant finding is that participants did not discuss how they felt their pedagogical approaches to teaching and learning would or could be modified to incorporate learning technologies. Rather, the participants were able to talk about pedagogical goals and strategies, and identified how the use of learning technology could "accomplish [teaching and learning] tasks more efficiently and effectively" (Hughes, 2005, p. 281). This form of technology-supported pedagogy is referred to as "technology by amplification" (Hughes, p. 281) and the implications of this will be discussed later.

Perceptions of Impact on Student Learning

The participants in this study perceive that there is potential in the use of learning technologies to enhance student learning when used in the right context and for the right teaching and learning purposes. They were able to identify situations where the use of learning technology was inappropriate to the context, for example, the use of PowerPoint in small group discussions, and for a particular student population, for example with mature students or geographically distant students. Participants agreed that the benefits of learning technologies stem from the potential of these technologies to enhance or supplement face-to-face learning. They did not perceive a benefit to students when use of a learning technique resulted in decreased contact with educators and peers. It was also clear that participants did not view learning technologies as a panacea for the teaching and learning challenges they face.

Implications for Nursing

Knowledge Development

Teaching does not occur in a stable, static environment. Rather it occurs in an "ill-structured, dynamic environment" and is a "complex cognitive skill" (Mishra & Koehler, 2006ap.1020). Educators must have knowledge and beliefs about what to teach, how to teach, and how students learn (Fernandez-Balboa & Stiehl, 1995, p. 293). Lee Shulman introduced the term pedagogical content knowledge (PCK) in 1985 to "represent the blending of content and pedagogy into an understanding of how particular topics, problems, or issues are organized, represented, … adapted … and represented for instruction" (Shulman, 1987, p. 8). PCK sits at the intersection of pedagogical knowledge and content knowledge.

"The issue of what teachers need to know about technology for effective teaching" has been debated (Koehler, Mishra, & Yahya, 2005). Mishra & Koehler (2006) argued that for effective integration of technology to occur, educators must have knowledge of pedagogy, content, and technology and their relationships to one another. Building on Shulman's concept of PCK, Mishra & Koehler described this concept as technological pedagogical content knowledge (Figure 5, Table 3) and insisted that effective teaching with technology requires knowledge of how technology relates to pedagogy and content (Hughes, 2005). According to Koehler, Mishra, & Yahya:

> good teaching with technology for given content matter is complex and multi-dimensional. It requires understanding the representation and formulation of concepts using technologies; pedagogical techniques that utilize technologies in constructive ways to teach content; knowledge of what makes concepts difficult or easy to learn and how technology can help address these issues; knowledge of students' prior knowledge and theories of epistemology; and an understanding of how technologies can be utilized to build on existing knowledge (p. 4).

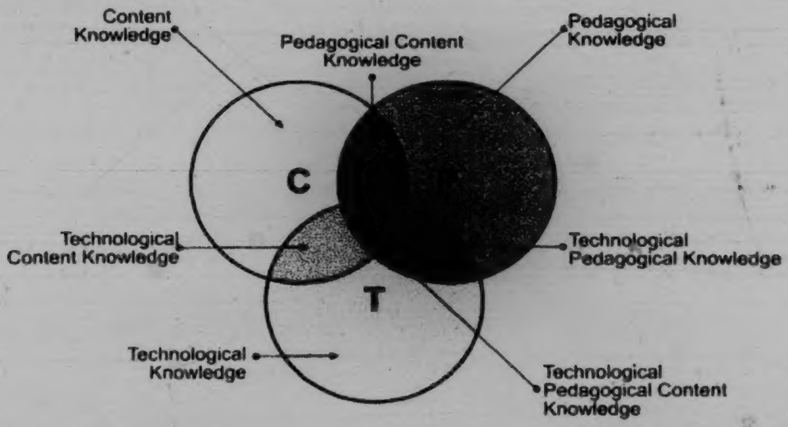

Content Knowledge
Pedagogical Content Knowledge
Pedagogical Knowledge
C
Technological Content Knowledge
Technological Pedagogical Knowledge
T
Technological Knowledge
Technological Pedagogical Content Knowledge

Figure 5: Diagram of Technological Pedagogical Content Knowledge Reprinted from Computers & Education, Article in Press, M.J. Koehler, P. Mishra, and K. Yahya, *Tracing the development of teacher knowledge in a design seminar: Integrating content, pedagogy, and technology*, Copyright 2005, with permission from Elsevier. Permission granted by M.J. Koehler.

Table 3

Areas of Knowledge as Outlined by Koehler, Mishra, and Yahya (2005)

Area of Knowledge	Abbreviation	Definition
Pedagogy	P	Process, practice, methods of teaching and learning includes the values, beliefs, techniques, strategies for teaching and evaluating students
Content	C	Is the subject matter to be learned/taught
Technology	T	Encompasses standard and advanced technologies and the different modalities they provide for representing information
Pedagogical Content Knowledge	PCK	Knowledge of pedagogy as it is specific to the teaching of the content. Includes understanding of what pedagogical techniques, what makes concepts easy or difficult to learn, and knowledge of students' prior knowledge and theories of epistemology
Technological Content Knowledge	TCK	Knowledge of how technology and content are reciprocally related to each other. For example, teachers need to know not just the subject matter they teach but all the manner in which the subject matter is transformed by the application of technology
Technological Pedagogical Knowledge	TPK	This knowledge emphasizes the existence, components and capabilities of technologies as they are used in teaching and learning processes. This knowledge would include what technologies/tools exist for a specific task as well as an understanding of the pedagogical strategies needed to get the most out of a piece of technology
Technological Pedagogical Content Knowledge	TPCK	Knowledge requires understanding the representations and formulation of concepts using technology, pedagogical techniques that use technologies in constructive ways to teach content; knowledge of what makes concepts easy or difficult to learn and how technology can address these issues; knowledge of students' prior knowledge and theories or epistemology and knowledge of how technologies can be utilized to build on existing knowledge

The concept of technological pedagogical content knowledge (TPCK) is important to this study. Participants described selecting learning technologies that enabled them to achieve pedagogical goals more efficiently or effectively, a concept previously introduced as technology by amplification (Hughes, 2005). This approach indicates a lack of understanding with respect to the complex relationships between content, pedagogy and technology may be lacking. As technology is not unbiased or neutral, it must be considered in the context of pedagogy and content (Hughes).

While the triad of technology, pedagogy, and content forms TPCK, the dyad of technological content knowledge (TCK) and technological pedagogical knowledge (TPK) is also formed (Figure 5, Table 3). TCK is described as an educator's understanding of how content or subject matter is transformed by the application of technology (Koehler, Mishra, & Yahya, 2005). TPK is described as an understanding of the range of tools that exists for a particular task as well as an understanding of what pedagogical strategies will get the most benefit from the use of technology (Koehler, Mishra, & Yahya). The findings in this study suggest participating nurse educators could benefit from development in these areas of knowledge. If the increased integration of learning technologies into nursing education is a goal of nursing programs, then it is imperative that we ensure nurse educators are developing the types of knowledge necessary to effectively use these technologies to enhance student learning.

Faculty Development

Viewing TPCK as essential to the effective integration of learning technologies in nursing education has significant implications for the professional development of nursing faculty. Participants of this study verbalized a desire to have formal "technology training" during orientation days. The need for such a process is also reflected in the literature, which indicates that "technology should be integrated into professional development experiences to ensure the effective integration of technology in teaching and learning" (Howland and Wedman, 2004, p. 241). However, according to Howland and Wedman the traditional, didactic workshop models for delivering professional development do not often result in changes in teaching practice. According to Koehler, Mishra, and Yahya (2005) "clearly, decontextualized, didactic approaches that merely emphasize the acquiring of technology skills are unlikely to succeed, since they do not address difficult but crucial relationships between technology and content, and technology and pedagogy" (p. 5).

Implications for Nursing Education

While resources exist to assist nurse educators in the acquisition of technology skills, a lack of support and inattention to faculty development exists with respect to helping nurse educators explore technology and content knowledge, and technology and pedagogical knowledge. The provision of technology training and support alone, demonstrates a failure to understand the complex nature of technology and the implications its utilization has on student learning. Participants in this study are motivated to improve their teaching and enhance the learning opportunities for students. Faculty development programs must provide thoughtful educational opportunities for nurse educators, so they may explore the relationships that exist between technology and pedagogy and content and should ensure that nurse educators are given the opportunity to learn how to effectively integrate learning technologies into their teaching practice. Nurse educators teaching in a problem-based learning curriculum may be well positioned to develop this knowledge given the pedagogy of PBL and the role of the nurse educator in this approach. For example, within a PBL approach faculty need to "redefine their relationship to the content to be learned and the students to be taught" (Rideout, 2001, p. 202). They also need to "reframe [their] views of the educational process" (Rideout, p. 202) and have an "awareness of who they are as faculty" (Rideout, p 202) and what values and beliefs they hold about teaching and learning. This reframing of faculty beliefs brings together the concepts of content and pedagogical knowledge. Assisting nurse educators to reframe their perceptions of learning technologies in the same way they are asked to reframe their thoughts on the educational process and faculty roles may facilitate nurse educators to effectively integrate learning technologies into their teaching practice.

Limitations

There are several limitations to this study. As nonprobability sampling was used, nurse educators who participated in the study may have had a strong bias, interest, or opinion with relation to this topic. Strong beliefs and bias in favor of the use of learning technologies in nursing education may have prevented nurse educators who do not use learning technologies from sharing their opinions in the focus group. Strong feelings in favor of learning technologies may also have made individuals who do not use learning technologies feel incompetent in their roles as educators. The reverse may also be true if participants had strong opinions against the use of learning technologies in nursing education. In group discussions, the investigator has less control over the data collection process than in a one-to-one interview (Holloway & Wheeler, 2003). As group participants interact there is a chance of group effect, where conformity or convergent views are established (Holloway & Wheeler). It is difficult to assess how significant this issue might have been. However, to minimize these potential limitations, I reminded focus group participants prior to the focus groups that there were no right or wrong answers to the questions asked, rather the goal of the focus group was to learn about their views and perceptions. As moderator of the focus group, I also ensured all participants were given the opportunity to speak when they indicated they wanted to add to the focus group discussions.

As group participants were recruited from a faculty of nursing that utilizes problem-based learning, this may limit the transferability of this study's findings to nurse educators' teaching in different curriculums where a different teaching and learning strategies are used. Since nurse educators in a problem-based learning curriculum must "depart from the more didactic chalk and talk approach that emphasizes the dissemination of information and become facilitators of learning" (Rideout, 2001, p. 193), it is no surprise that the nurse educators in this study consistently identified themselves as facilitators and valued the collaborative aspect of learning. The findings show that the participating nurse educators' beliefs about teaching and learning impact the way in which they use learning technologies. The findings of a similar study might differ if participants were in a nonproblem-based learning program. As this study focused on nurse educators teaching in baccalaureate nursing programs, this may limit the transferability of the findings to nurse educators who teach in practical nurse, diploma, or graduate nursing programs.

The investigator acted as moderator of the focus group sessions which may be a limiting factor for the following reasons. I had never previously moderated a focus group. Several measures were taken to become prepared for the role of a focus group moderator. Firstly, I met with a focus group moderator who assisted in the development of the moderator's guide (Appendix C) that was used to guide both focus groups. Secondly, I reviewed several textbooks on focus group moderation (Edmunds, 1999; Morgan & Krueger, 1998). Finally, I received guidance from a committee of experienced academic researchers. While I was able to collect a wealth of information, there were areas in which the focus group and discussions could have been improved to enhance data collection. For instance, both the focus groups went over the scheduled time, with two participants having to leave the focus group prior to the photo narrative technique. Redevelopment of questions in the moderator's guide could have focused the discussions, allowing the sessions to end on time. A more experienced moderator may have been better able to redirect or bring to a close participants' discussions on particular topics. As there was a great deal of discussion by participants in the focus group, another suggestion for improvement in the data collection may be to reduce the number of focus group participants per group. This would allow more time to explore thoughts and ideas shared by participants with the group.

The moderator's guide could have also been improved with respect to the questions asked of participants. It was found during the focus groups that participants often interpreted questions in a way that was not intended. For example, when questioned about participants' use of learning technologies, participants instead described how students use technologies. I am particularly interested in the subject matter of this study, and great care was taken not to introduce bias into the focus group discussions. During data collection, and particularly during the photo elicitation WebCT demonstration, criticisms of my WebCT sites were given by a participant. While, I responded by validating the concerns noted by the participant, in reflection, I could have spent more time exploring these concerns with the group. Finally, the ability to enhance credibility of the data through member checking depends on the willingness of group participants. While I received feedback on theme development and was in close contact with her thesis supervisor throughout data analysis, credibility of the data may be a limitation, as member checking was not utilized as originally intended due to time constraints.

Suggestions for Further Study

The purpose of this study was to increase understanding of how nurse educators in a single baccalaureate nursing program perceive the integration of learning technologies into their teaching approach; many other questions have been raised as a result of this study.

As participants of this study were recruited from a single academic institution that utilized a problem-based learning approach, conducting similar studies with nurse educators in programs that do not utilize problem-based learning approaches may be useful in producing findings that are more transferable. As identified in the findings, nurse educators in this study identified lack of time and lack of training as major inhibiting factors in their integration of learning technologies. The most significant inhibiting factors identified by participants were extrinsic in nature, a finding supported in the literature (Betts, 1998; Pajo & Wallace, 2001; Schifter, 2000). As lack of time and lack of training are not barriers nurse educators can overcome by themselves, future research that engages students, educators, and administration in shared discussion and exploration of their pedagogical use of learning technologies in nursing programs may be of the most benefit. Developing an understanding of faculty administrators' perceptions could be an important first step in bringing together the faculty and administration of this faculty of nursing, to articulate goals and needs with respect to the integration of learning technologies throughout their baccalaureate nursing program.

It is important for nurse educators to strive for "the best pedagogic answer[s] to the numerous learning challenges" (Cartwright, p. 89) they encounter. Inappropriate use of learning technologies can hurt the teaching and learning process and it is crucial that pedagogy drives the nurse educators' use of learning technologies. Therefore, it is important to explore how nurse educators develop their knowledge of technology, pedagogy, and content, and their understanding of how these components are interrelated. The participants identified that more training was necessary to begin to integrate learning technologies in nursing education. Studies (Bonnel, Wambach, & Connors, 2005; Howland & Wedman, 2004; Koehler, Mishra, & Yahya, 2005) have described and outlined faculty development programs designed to prepare faculty members to teach with technology. Faculty development initiatives designed for nurse educators could be studied to determine the effectiveness of these programs in developing nurse educators' knowledge.

While several studies have found that students in blended learning environments demonstrate higher levels of knowledge gains (Bauer, Geront, & Huynh, 2001; Rouse, 2000; Taradi & Taradi, 2004) and high satisfaction with this form of teaching and learning (Balwin, Johnson, & Hill, 1994; Bloom & Hough, 2003; Jeffries, 2001; Maag, 2004; Serly-Ble, Taffe, Clarke, & Dorman, 2001; Sole & Lindquist, 2001), further research is needed to understand the impact learning technologies have on student learning.

A final recommendation for future research would be to explore the effectiveness of photographic research techniques, such as photo elicitation and photo narrative, in nursing research.

Summary

The passion for this study stemmed from my own experiences as a nurse educator who utilizes learning technologies in my teaching practice. The objective of this study was to explore nurse educators' perceptions, experiences, and beliefs regarding the use of learning technologies as teaching and learning strategies in baccalaureate nursing programs. The findings of this study are grounded in the experiences of the faculty participants and suggest that nurse educators are active participants in the teaching and learning process and have a desire to use pedagogically sound teaching strategies to facilitate the learning of nursing students. The findings indicate that lack of time, resources, and training are significant factors that prevent nurse educators from increasing their integration of learning technologies into their teaching, a finding supported in the literature. Identifying factors that motivate and inhibit nurse educators from using learning technologies is an important first step toward designing faculty development programs suited to the needs of nurse educators to ensure the effective integration of technologies that enhance student learning.

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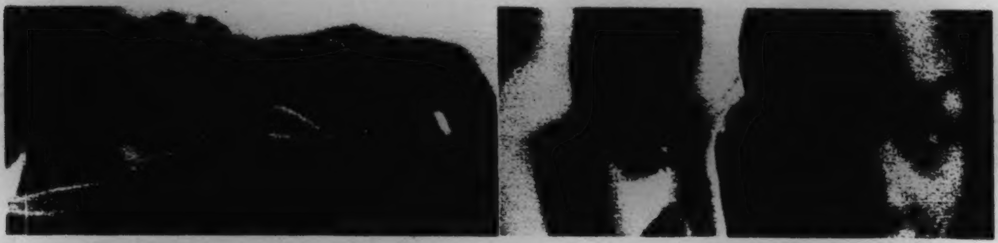
Appendix A1 – Mailbox Recruitment Posters

[redacted]

Perceptions of Learning Technologies in Nursing Education

[redacted]

Study Participants Needed



We are looking for participants to take part in a research study that aims to explore how nurse educators like you, perceive learning technologies as teaching and learning strategy in baccalaureate nursing programs.

If you are a nurse educator in the Faculty of Nursing at the [Academic Institution], we hope you would consider participating in a focus group to share your experiences and thoughts on this topic. The focus groups will be held on site at the Institutions Name.

For more information about this study, or to volunteer, please contact: Kerry Rusk at ___________.
Thank you.

Appendix A2 – Email Recruitment Ad

From: Investigators Email Address
Re: Study Participants Needed

Study: Nurse Educators' Perceptions of Learning Technologies in Nursing Education

We are looking for participants to take part in a research study that aims to explore how nurse educators like you, perceive learning technologies as teaching and learning strategy in baccalaureate nursing programs.

If you are a nurse educator in the Faculty of Nursing at the [Selected Academic Institution], we hope you would consider participating in a focus group to share your experiences and thoughts on this topic. The focus groups will be held on site in the Faculty of Nursing.

For more information about this study, or to volunteer, please contact: Kerry Rusk at (780) ___________. Thank you.

Appendix B – Information Sheet and Consent Form

Title of Research Study: Nurse Educators' Perceptions of Learning Technologies in an Undergraduate Nursing Program

Principal Investigator(s): Kerry Rusk, RN, BScN, MN Student

Thesis Committee Members: Dr. Tricia Marck (Supervisor - Faculty of Nursing), Dr. Florence Myrick (Co-Supervisor - Faculty of Nursing), & Dr. Katy Campbell (Faculty of Extension)

Purpose:
As a nurse educator, you are being invited to participate in a focus group that aims to explore how nurse educators like you, view learning technologies as a means of supporting the teaching and learning process. The study also hopes to explore how you may currently use or see learning technologies being used in your baccalaureate nursing program, as well as to explore any factors which you feel may influence your own use of learning technologies.

Voluntary Participation:
Your participation in this study is completely voluntary and you may withdraw your consent to participate at any time during the process with no implications for your employment. If you do choose to withdraw from the study, any information derived from your participation will be deleted from the data collection and analysis.

If you choose to participate in the study, you will be engaged in a focus group with approximately 4 - 7 other nurse educators. The focus group should last approximately 2 hours and will engage in you a discussion regarding your use of learning technologies, how you perceive learning technologies as a teaching and learning strategy and what you feel affects your use of these technologies in your teaching practice. There are no right or wrong answers to these questions; rather the important thing is for you to speak openly and honestly about your ideas, opinions and views on these issues. The focus group can also provide you with a safe space to speak about your values, beliefs and experiences regarding learning technologies.

After the focus group, the investigator would like to stay in touch with you for one additional activity. The investigator would like you to review her work in identifying the major themes of the focus group to ensure that she is correctly capturing your comments. Participation in this aspect of the study is voluntary, and you may choose to participate in the focus group, but not in this activity.

You should incur no costs as a result of your participation in this study. Food and beverages will be made available to you at no cost during the focus group and you are asked to submit parking receipts to the investigator for reimbursement.

Procedures:
Before the focus group session begins you will be asked to complete a short questionnaire regarding your demographics. Please do not place your name on this questionnaire. Once you have completed the questionnaire please seal it in the blank envelope provided. Your demographic data will be kept private and will not be linked to any of the comments you make during the focus group session.

The focus group session will be audio recorded. This will be done so that the investigator may review the comments made during the focus group. All audio recordings will be transcribed to ensure accuracy of the information you provide. Only the investigator, the research assistant, and the investigator's thesis co-supervisors will have access to the audio recordings and transcripts. Any identifying information you provide about yourself will be removed from the audio transcripts. The demographic data, audio recordings that will be stored on CD, and the transcriptions will be kept in a combination locked safe for a period of 7 years after the completion of this study.

Possible Benefits:
A potential benefit of participating in this focus group is the opportunity to describe your experience with learning technologies with others who have shared the experience. Additionally, the opportunity to connect with colleagues and share similar and divergent experiences and thoughts might assist in you evaluating your own use of learning technologies. Engaging in the follow-up activity would also allow you to see some of the themes that developed from your discussion and would give you an opportunity to reflect and expand on your initial comments. The expected benefits of this study is that is will provide an understanding of how nurse educators use learning technology and identify factors which promote or prevent the use of these technologies in undergraduate nursing classes.

Possible Risks:
Based on the research, there are no foreseeable adverse events that you could suffer as a result of participating in this study.

Confidentiality:
It is not possible to remain anonymous in a focus group. Participants will be reminded prior to the start of the focus group that what is discussed during the focus group must remain confidential. If there is something you would not like to discuss, please do not feel pressure to share it with the group.

There will be no names attached to the demographic data, audio recordings, research notes or transcriptions. It is, however useful to use direct quotes to more clearly capture the meanings in reporting the findings from this form of evaluation. You will be asked at the end of the focus group if there is anything you said which you do not want included as a quote, and we will ensure that these comments are not included in the transcripts.

While comments made during the focus group may be used in publications and presentations, there will be no identifying information or names used in any written reports or publications that result from this focus group.

Only the investigator, the investigator's thesis co-supervisors and the research assist will have access to the audio recordings and transcriptions.

Contact Names and Telephone Numbers

If you have any questions or concerns about your rights in this study, you may contact the Health Review Ethics Board Panel B at (780) 492-0839.

If you have any questions or concerns about the study:

Kerry Rusk, RN, BScN	Dr. Patricia Marck	Faculty of Nursing, Research Service Officer

CONSENT FORM

Title of Project: Nurse Educators' Perceptions of Learning Technologies in an Undergraduate Nursing Program

Investigator:

Kerry Rusk, RN, BScN, MN Student	780 - 903 - 3809

Thesis Committee:

Dr. Patricia Marck, Co-Supervisor	780 – 492 - 2109
Dr. Florence Myrick, Co-Supervisor	780 – 492 - 0251
Dr. Katy Campbell	780 - 492 - 1858

To be completed by study participant:

	Yes	No
Do you understand that you have been asked to be in a research study?	☐	☐
Have you read and received a copy of the attached Information Sheet?	☐	☐
Do you understand the benefits and risks involved in taking part in this research study?	☐	☐
Have you had an opportunity to ask questions and discuss this study?	☐	☐
Do you understand that you are free to withdraw from the study at any time, without having to give a reason?	☐	☐
Has the issue of confidentiality been explained to you?	☐	☐
Do you understand who will have access to your information and comments made during this focus group?	☐	☐

Who explained this study to you?

____

I agree to take part in this focus group: Yes ☐ No ☐

I agree to take part in the follow-up activity: Yes ☐ No ☐

Signature of Study Participant: ____________________________________

(Printed Name) ____________________________________

Date: ________________

Signature of Witness: ____________________________________

I believe the person signing this form understands what is involved in the study and voluntarily agrees to participate.

Signature of Investigator: ____________________________________

Date: ________________

A COPY OF THE INFORMATION SHEET AND THE SIGNED CONSENT FORM WILL BE GIVEN TO THE STUDY PARTICIPANTS

Appendix C – Moderator's Guide

Objective: To begin to establish rapport, describe purpose of the focus group

Strategy/Questions:

- Greet the focus group participants
- Thank individuals for participating
- Provide participants with brief personal history and outline purpose for focus group (i.e. part of MN thesis)

Objective: Obtain informed consent from participants

Strategy/Questions:

- Read, out loud, consent form
- Highlight to the group ways in which the focus group discussions are to be Recorded
- Outline how the audio recording and transcripts will be handled, and stored
- Describe members of thesis committee, as well as fellow graduate student, who will the only individuals to view or read the discussions from the focus group
- Discuss the desire by the investigator to follow-up with participants for member checking of the themes as they are developed by the investigator
- Open up the floor for question
- Informed consent is required prior to initiation of focus group

Objective: Obtain demographic data of focus group participants

Strategy/Questions:

- Provide each focus group participant with a demographic data questionnaire and a blank envelope
- Request that participants not put names on questionnaire and instruct participants to seal questionnaires in envelope when completed

Objective: Set ground rules to ensure maximal confidentiality and comfort of participants

Strategy/Questions:

- Reiterate that complete confidentiality is not possible in focus groups
- Remind participants that their relationship will extend beyond focus group
- Outline basic group rules:
    - Any comments made within focus group should not be discussed outside of group
    - No right or wrong answers
    - Speak one at a time and as clearly as possible
- Ask group for suggestions on other ground rules
- Group rules will be written by moderator and placed on a wall within room

Objective: Participants will begin to establish rapport amongst each other

Strategy/Questions:

- Ask each participant to tell the group:
  - First name only
  - What they teach
  - How long they have taught
  - The last movie they saw in a theatre

Objective: Introduce topic and give participants an opportunity to reflect on their beliefs and experiences with nursing education

Strategy/Questions:

- "How do you teach?" " How would you describe your teaching style?"
- "What do you feel is the role of the teacher in nursing?"
- "And what do you feel is the role of the learner in nursing education?"
- "What role does the curriculum have on teaching and learning?"
- "How you think people learn?" "How do you learn?"
- "Who was (without providing names) the best teacher you had in nursing and why?"
- "What has been your best teaching experience and why?"

Objective: Explore the participants' understanding of the phenomena being studied

Strategy/Questions:

- "How would you define or describe learning technologies?"
- "What are some examples of learning technologies?" (these will be written down as they are identified) "Are these available to you?"
- Create a list of what participants like and dislike about each learning technology they identify
- Clarify to participants what learning technologies will be focus of study

Objective: Explore participants personal experiences with learning technology

Strategy/Questions:

- "When and what was your first experience with a computer?"
- Complete this sentence: "technology used in my nursing education included: ________________"
- "How would you describe your skill with a computer now?"
- "How and where did you learn to use a computer and the internet?"
- "What has motivated you to learn more about computers/internet and what has prevented you from learning more?"
- Complete this sentence: "I am __________ about my level of skill with a computer and the internet"

Objective: Explore participants experiences with learning technology in the classroom

Strategy/Questions:

- "What are some examples of learning technologies you have used in your teaching?"
- "Why did you make the decision to use that learning technology over other learning technologies?"
- "What were your experiences with this technology?"
- "How do you feel the use of this technology fit with your teaching style and was this important to you?"
- "How do you feel the use of this learning technology impacted student learning?"
- "What types of support are available to you when implementing learning technology into your technology?"
- "How did you use this support and why?"

Objective: Use photo elicitation to explore participants view of learning technologies such as WebCT

Strategy/Questions:

- "What do you know about WebCT?"
- "How have you seen it used and what are your experiences with WebCT?"
- Demonstration of WebCT use with clinical and tutorial courses
- "What are your impressions of WebCT?"
- "What did you like/dislike?"
- "What makes this an enhancement/distraction to education and student learning?"
- Complete the sentence: "I would like to use WebCT if:________________"

Objective: Explore the factor which participants feel affect their use of learning technologies

Strategy/Questions:

- "What do you feel are some of the advantages and disadvantages of using learning technology?"
- "What are some of the reasons why you would use learning technologies, and what are some reasons why you would not use learning technologies in your teaching?"
- "What does or would motivate you to use learning technologies in your teaching?"
- "What would or has prevented/stopped you from using learning technologies in your teaching?"
- Activity: Give participants 5 post-it notes (numbered 1 through 5). On 1 wall there will be several pieces of paper, each with a motivating factor printed on it. Participants will be instructed to review all motivating factors, then select the top 5 motivating factors for them (1 = most significant factor). Activity will be repeated for inhibiting factors which will be posted on a separate wall.
- "Why did some factors motivate/inhibit you, while others did not?"

Objective: Use photo narratives to develop group accounts about the use of learning technologies in undergraduate nursing education

Strategy/Questions:

- Remind group of the comments made during photo elicitation (WebCT) exercise as well as from the factors activity
- Participants will be asked to review the comments and the results of the factors activity
- "What do these comments/results make you feel about the use of learning technology in nursing education?"
- "How do these comments/results relate to your own experiences?"

Objective: Summarize participant's perceptions of learning technologies as a teaching tool

Strategy/Questions:

- "How do you feel about the use of learning technologies in nursing education?"
- Complete the sentence: "Overall, the benefit of using learning technology in
- nursing education is ______________"
- Complete the sentence: "Overall, the disadvantage of learning technology use in
- nursing education is _____________"
- "How do you feel learning technology impacts student learning?"
- "If you are interested in using learning technologies, what do you need to increase
- your use of these technologies?"

Objective: Ensure participants have opportunity to share opinions that were not expressed during focus group

Strategy/Questions:

- Explain to participants that focus group is drawing to an end
- Explain there is an opportunity for participants to now share any thoughts or ideas that they have regarding the topic that were not addressed or to discuss something they learned as a result of the focus group

Objective: Thank participants for volunteering their time and sharing their thoughts

Strategy/Questions:

- Conclude group by thanking all members for their participation
- Remind volunteers for member checking that investigator will be in touch
- Direct members to food and beverages which will be provided

Appendix D – Confidentiality Agreement

Confidentiality Agreement

Project title - *Nurse Educators' Perceptions of Learning Technologies as Teaching and Learning Strategies in an Baccalaureate Nursing Program*

I, ______________________________, the **Research Assistant**, have been hired to **assist with the set-up and take down of two focus groups, engage in note -taking during and after the 2 focus group sessions, and to verify the accuracy of the investigator's transcriptions of the focus groups audio recordings.**

I agree to -

1. keep all the research information shared with me confidential by not discussing or sharing the research information in any form or format (e.g., disks, tapes, transcripts) with anyone other than the *Researcher(s)*.
2. keep all research information in any form or format (e.g., disks, tapes, transcripts) secure while it is in my possession.
3. return all research information in any form or format (e.g., disks, tapes, transcripts) to the *Researcher(s)* when I have completed the research tasks.
4. after consulting with the *Researcher(s)*, erase or destroy all research information in any form or format regarding this research project that is not returnable to the *Researcher(s)* (e.g., information stored on computer hard drive).

____________________	____________________	____________________
(Print Name)	(Signature)	(Date)

Researcher - ***Kerry Rusk, RN, BScN***

Thesis Committee Members
Dr. Patricia Marck (Faculty of Nursing)
Dr. Florence Myrick (Faculty of Nursing)
Dr. Katy Campbell (Faculty of Extension)

Appendix E – Demographic Data Questionnaire

Title of Research Study: **Nurse Educators' Perceptions of Learning Technologies in an Undergraduate Nursing Program**

Principal Investigator(s): Kerry Rusk, RN, BScN, MN Student

Thesis Committee Members: Dr. Tricia Marck (Supervisor - Faculty of Nursing), Dr. Florence Myrick (Co-Supervisor - Faculty of Nursing), & Dr. Katy Campbell (Faculty of Extension)

Demographic Data Questionnaire

Instructions: *Please take the opportunity to provide me with some information about yourself. Please Note – Do not place your name on this sheet. Upon completion of this questionnaire, please seal it in the blank envelope provided. The information you provide on this questionnaire will remain private and will not be linked in any way to the comments you make during this focus group.*

1. What is your gender? (Please circle) Female Male

2. What is your age? ________

3. What is your educational preparation? (Please list credentials)

____

4. How many years have you taught undergraduate nursing students? __________

5. How many years have you been with this faculty of nursing? __________

6. What is your *current* position within this faculty?

☐ Sessional Faculty	☐ Associate Professor
☐ Faculty Lecturer	☐ Professor
☐ Assistant Professor	☐ Other: ________________

7. Do you teach (please circle) Full-time Part-Time

8. What would you describe your primary teaching responsibilities to be? (Please select one)
   - ☐ Clinical Courses
   - ☐ Tutorial Courses
   - ☐ I teach clinical and tutorial courses equally

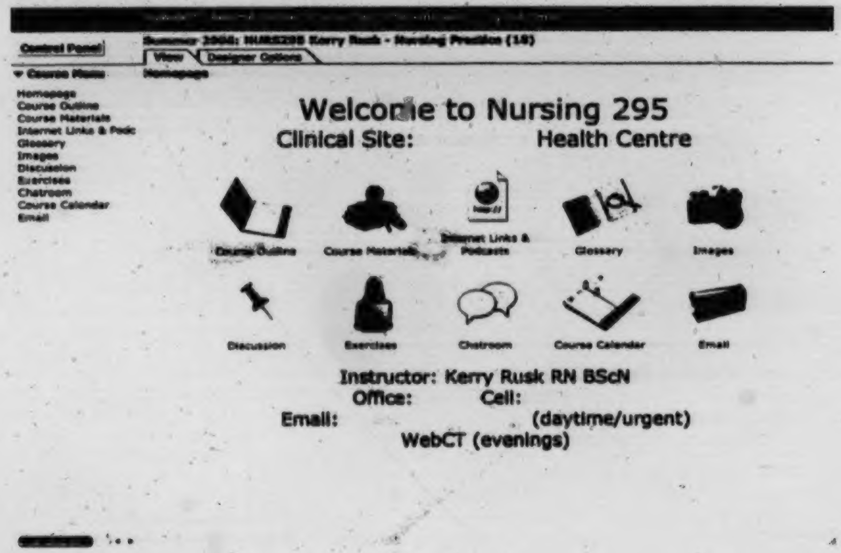
Thank you for completing this questionnaire.
Please seal this in the blank enveloped provided to you

Appendix F – Screenshots of WebCT Photo Elicitation

A WebCT course developed for a clinical and tutorial course were shown to focus group participants. The focus group moderator navigated the two WebCT sites. Here are sample screenshots of what the focus group participants were shown.

WebCT Clinical Course

Homepage


Summer 2006: NURS295 Kerry Rusk - Nursing Practice (10)
Control Panel
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Welcome to Nursing 295

Clinical Site: Health Centre

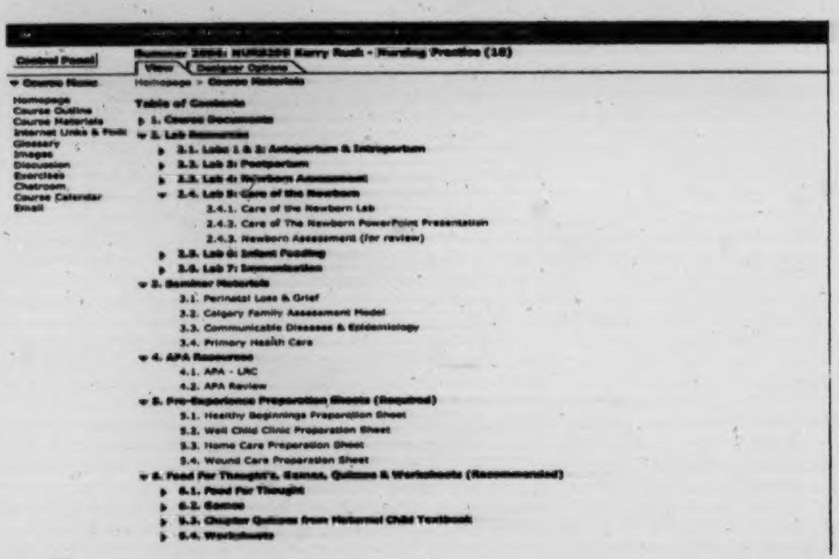
Instructor: Kerry Rusk RN BScN

Office: Cell:

Email: (daytime/urgent)

WebCT (evenings)

Course Materials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Images
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Exercises
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Course Calendar
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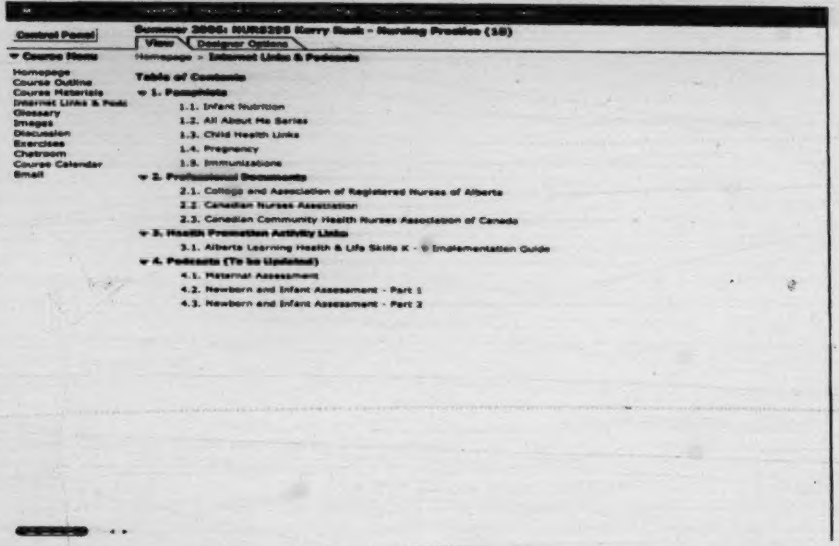
Homepage > Course Materials

Table of Contents

- 1. Course Documents
- 2. Lab Resources
  - 2.1. Labs 1 & 2: Antepartum & Intrapartum
  - 2.2. Lab 3: Postpartum
  - 2.3. Lab 4: Newborn Assessment
  - 2.4. Lab 5: Care of the Newborn
    - 2.4.1. Care of the Newborn Lab
    - 2.4.2. Care of The Newborn PowerPoint Presentation
    - 2.4.3. Newborn Assessment (for review)
  - 2.5. Lab 6: Infant Feeding
  - 2.6. Lab 7: Immunization
- 3. Seminar Materials
  - 3.1. Perinatal Loss & Grief
  - 3.2. Calgary Family Assessment Model
  - 3.3. Communicable Diseases & Epidemiology
  - 3.4. Primary Health Care
- 4. APA Resources
  - 4.1. APA - LRC
  - 4.2. APA Review
- 5. Pre-Experience Preparation Sheets (Required)
  - 5.1. Healthy Beginnings Preparation Sheet
  - 5.2. Well Child Clinic Preparation Sheet
  - 5.3. Home Care Preparation Sheet
  - 5.4. Wound Care Preparation Sheet
- 6. Food For Thought's, Games, Quizzes & Worksheets (Recommended)
  - 6.1. Food For Thought
  - 6.2. Games
  - 6.3. Chapter Quizzes from Maternal Child Textbook
  - 6.4. Worksheets

Internet Links and Podcasts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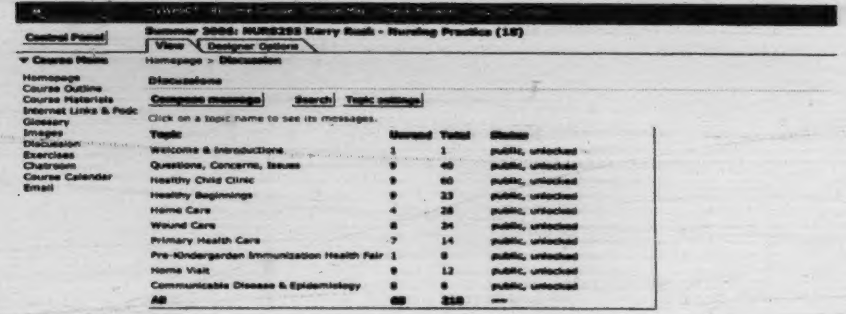
Summer 2006: NURS295 Kerry Rush - Nursing Practice (18)

Homepage > Internet Links & Podcasts

Table of Contents

- ▼ 1. Pamphlets
  - 1.1. Infant Nutrition
  - 1.2. All About Me Series
  - 1.3. Child Health Links
  - 1.4. Pregnancy
  - 1.5. Immunizations
- ▼ 2. Professional Documents
  - 2.1. College and Association of Registered Nurses of Alberta
  - 2.2. Canadian Nurses Association
  - 2.3. Canadian Community Health Nurses Association of Canada
- ▼ 3. Health Promotion Activity Links
  - 3.1. Alberta Learning Health & Life Skills K - 9 Implementation Guide
- ▼ 4. Podcasts (To be Updated)
  - 4.1. Maternal Assessment
  - 4.2. Newborn and Infant Assessment - Part 1
  - 4.3. Newborn and Infant Assessment - Part 2

Discussion Board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Topic settings

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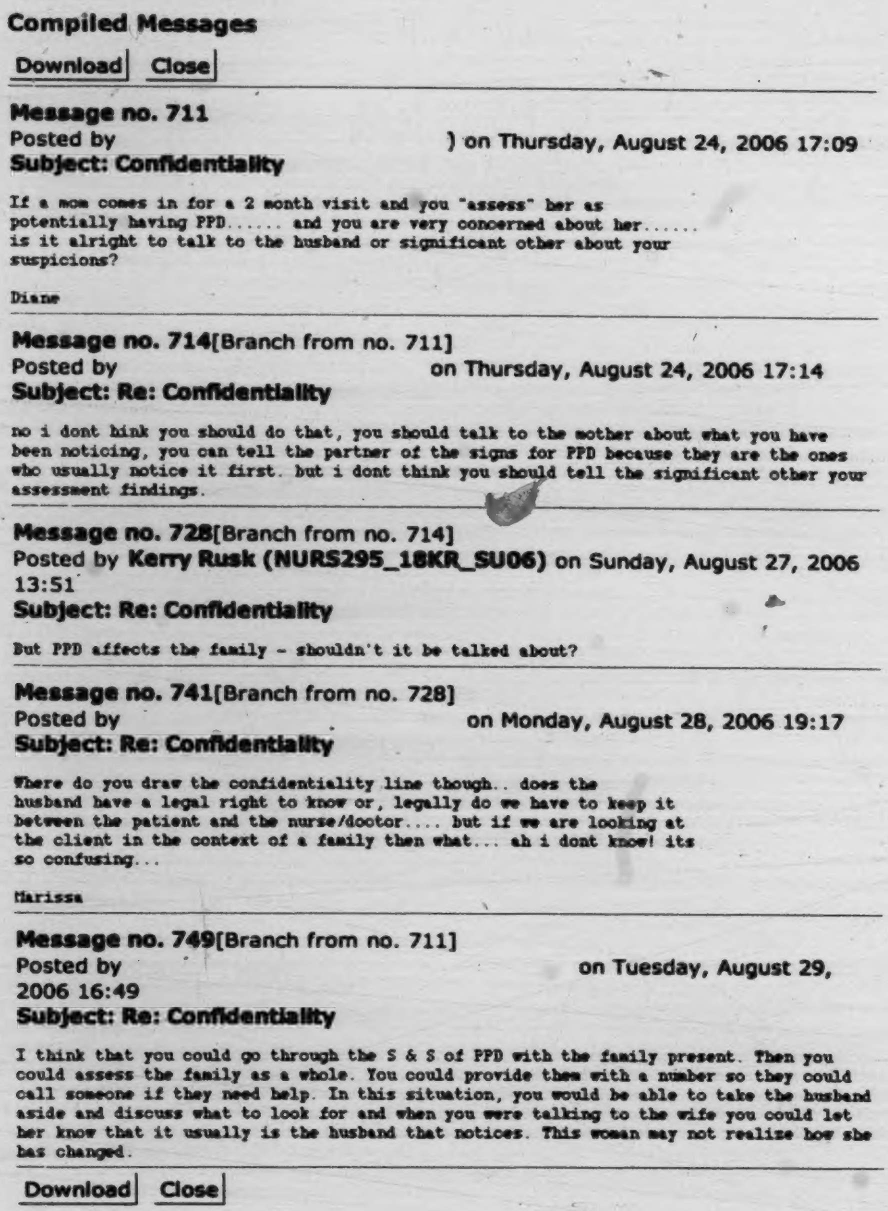
Homepage > Discussion

Discussions

Click on a topic name to see its messages.

Topic	Unread	Total	Status
Welcome & Introductions	1	1	public, unlocked
Questions, Concerns, Issues	9	40	public, unlocked
Healthy Child Clinic	9	60	public, unlocked
Healthy Beginnings	9	33	public, unlocked
Home Care	4	28	public, unlocked
Wound Care	8	34	public, unlocked
Primary Health Care	7	14	public, unlocked
Pre-Kindergarden Immunization Health Fair	1	8	public, unlocked
Home Visit	9	12	public, unlocked
Communicable Disease & Epidemiology	8	8	public, unlocked
All	68	218	—

Sample Discussion Thread



Compiled Messages

Message no. 711
Posted by) on Thursday, August 24, 2006 17:09
Subject: Confidentiality

If a mom comes in for a 2 month visit and you "assess" her as potentially having PPD...... and you are very concerned about her...... is it alright to talk to the husband or significant other about your suspicions?

Diane

Message no. 714[Branch from no. 711]
Posted by on Thursday, August 24, 2006 17:14
Subject: Re: Confidentiality

no i dont hink you should do that, you should talk to the mother about what you have been noticing, you can tell the partner of the signs for PPD because they are the ones who usually notice it first. but i dont think you should tell the significant other your assessment findings.

Message no. 728[Branch from no. 714]
Posted by **Kerry Rusk (NURS295_18KR_SU06)** on Sunday, August 27, 2006 13:51
Subject: Re: Confidentiality

But PPD affects the family - shouldn't it be talked about?

Message no. 741[Branch from no. 728]
Posted by on Monday, August 28, 2006 19:17
Subject: Re: Confidentiality

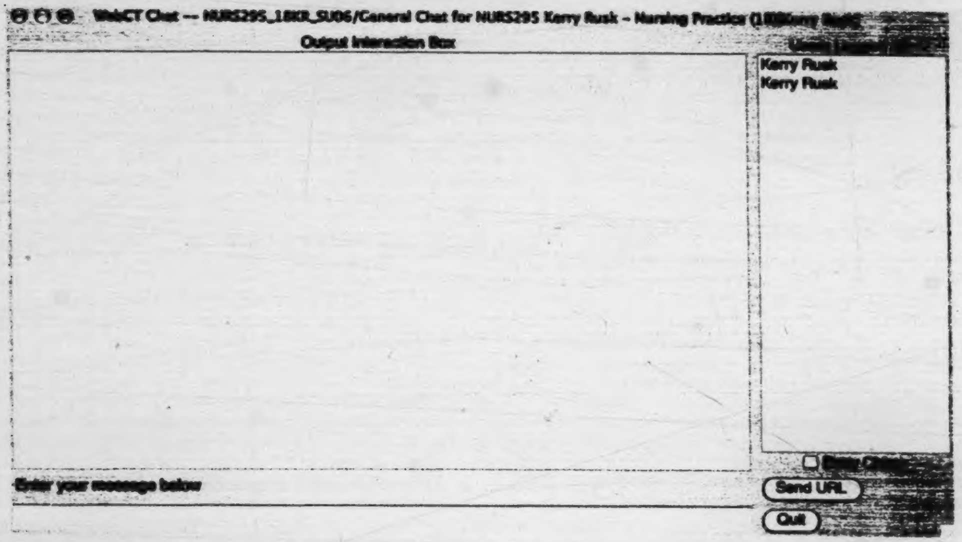
Where do you draw the confidentiality line though.. does the husband have a legal right to know or, legally do we have to keep it between the patient and the nurse/doctor.... but if we are looking at the client in the context of a family then what... ah i dont know! its so confusing...

Marissa

Message no. 749[Branch from no. 711]
Posted by on Tuesday, August 29, 2006 16:49
Subject: Re: Confidentiality

I think that you could go through the S & S of PPD with the family present. Then you could assess the family as a whole. You could provide them with a number so they could call someone if they need help. In this situation, you would be able to take the husband aside and discuss what to look for and when you were talking to the wife you could let her know that it usually is the husband that notices. This woman may not realize how she has changed.

Chat Room


WebCT Chat -- NURS295_18KR_SU06/General Chat for NURS295 Kerry Rusk – Nursing Practice
Output Interaction Box
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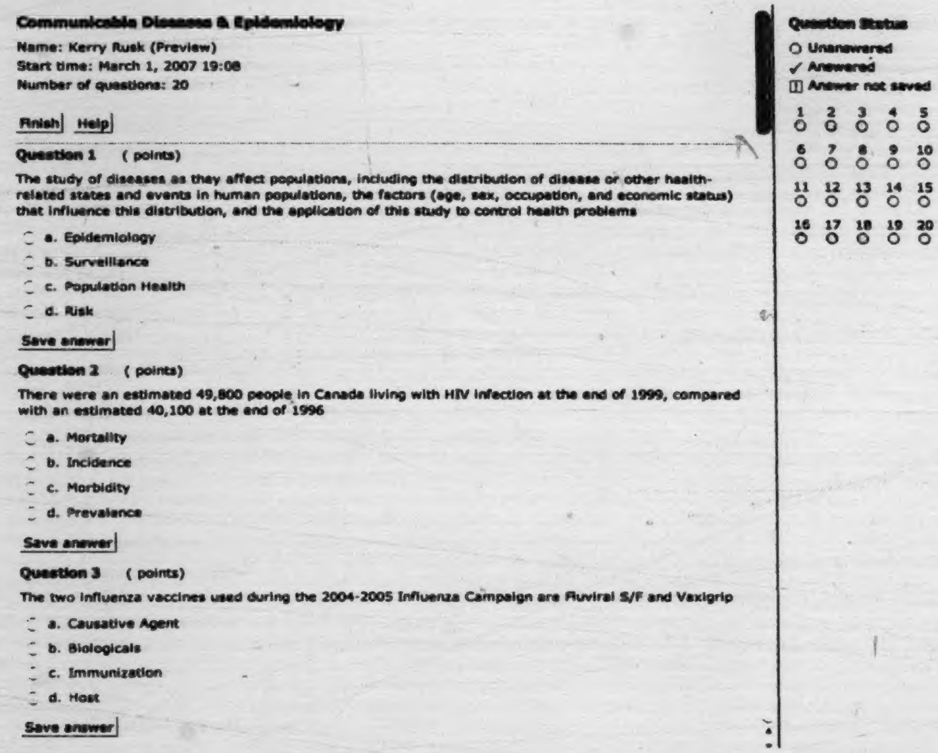
Kerry Rusk
Enter your message below
Send URL
Quit

Quiz Tool



Communicable Diseases & Epidemiology

Name: Kerry Rusk (Preview)
Start time: March 1, 2007 19:08
Number of questions: 20

Finish
Help

Question 1 (points)

The study of diseases as they affect populations, including the distribution of disease or other health-related states and events in human populations, the factors (age, sex, occupation, and economic status) that influence this distribution, and the application of this study to control health problems

- ○ a. Epidemiology
- ○ b. Surveillance
- ○ c. Population Health
- ○ d. Risk

Save answer

Question 2 (points)

There were an estimated 49,800 people in Canada living with HIV infection at the end of 1999, compared with an estimated 40,100 at the end of 1996

- ○ a. Mortality
- ○ b. Incidence
- ○ c. Morbidity
- ○ d. Prevalence

Save answer

Question 3 (points)

The two influenza vaccines used during the 2004-2005 Influenza Campaign are Fluviral S/F and Vaxigrip

- ○ a. Causative Agent
- ○ b. Biologicals
- ○ c. Immunization
- ○ d. Host

Save answer
Question Status
○ Unanswered
✓ Answered
Answer not saved
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20

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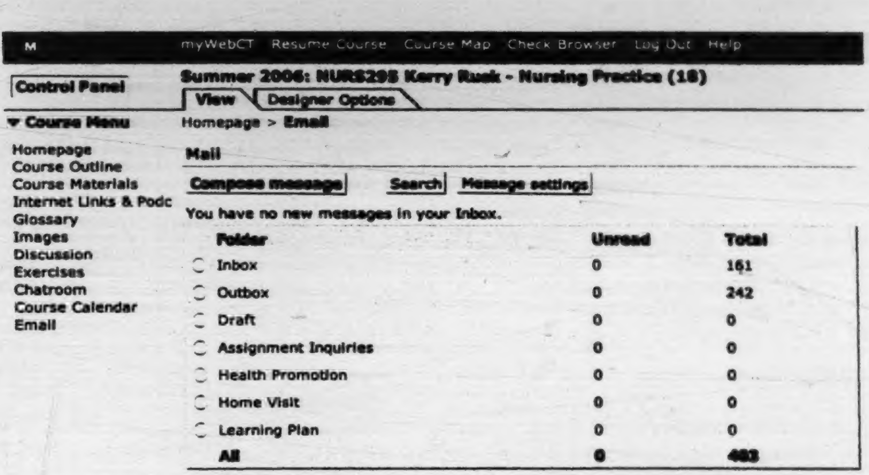
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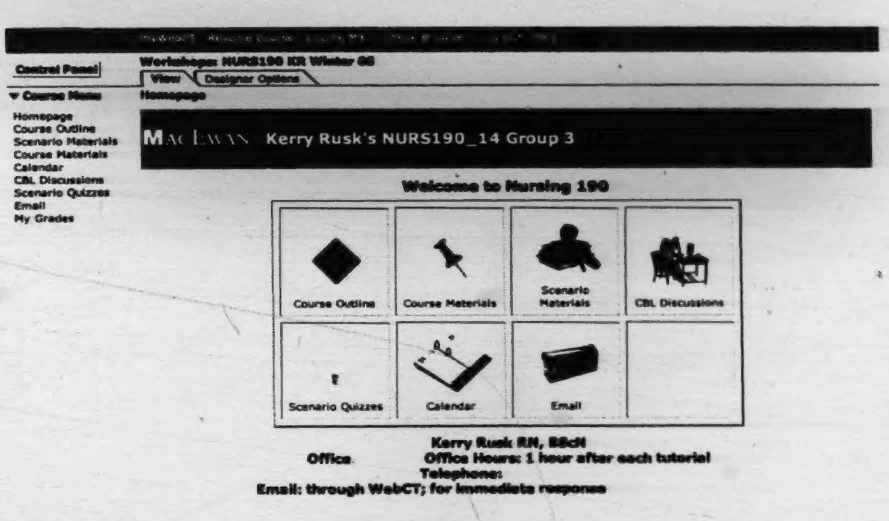
Summer 2006: NURS295 Kerry Rusk - Nursing Practice (18)

You have no new messages in your Inbox.

Folder	Unread	Total
○ Inbox	0	161
○ Outbox	0	242
○ Draft	0	0
○ Assignment Inquiries	0	0
○ Health Promotion	0	0
○ Home Visit	0	0
○ Learning Plan	0	0
All	**0**	**403**

Tutorial Course

Homepage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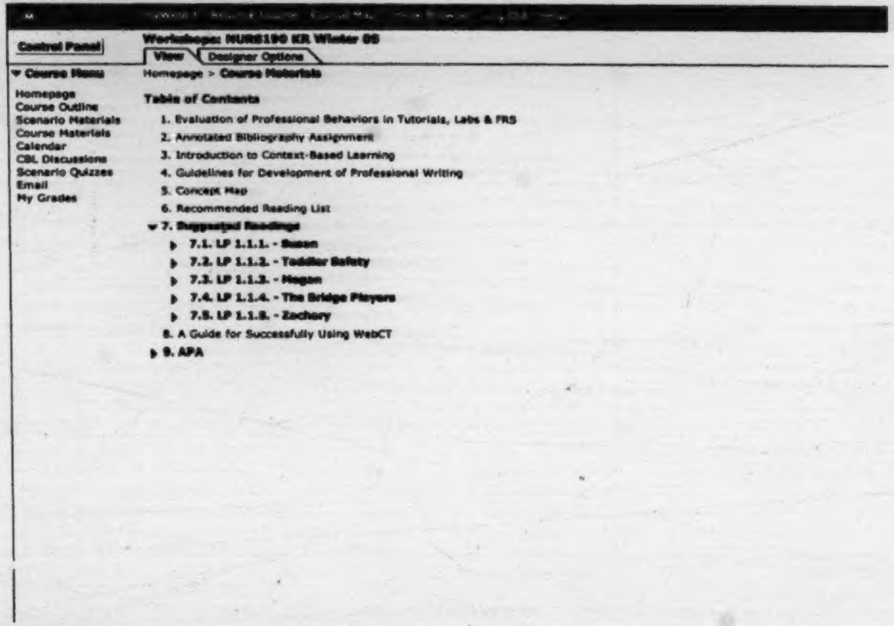
Workshops: NURS190 KR Winter 06

Kerry Rusk's NURS190_14 Group 3

Welcome to Nursing 190

Kerry Rusk RN, BScN
Office **Office Hours: 1 hour after each tutorial**
Telephone:
Email: through WebCT; for immediate response

Course Materials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Workshops: NURS190 KR Winter 05

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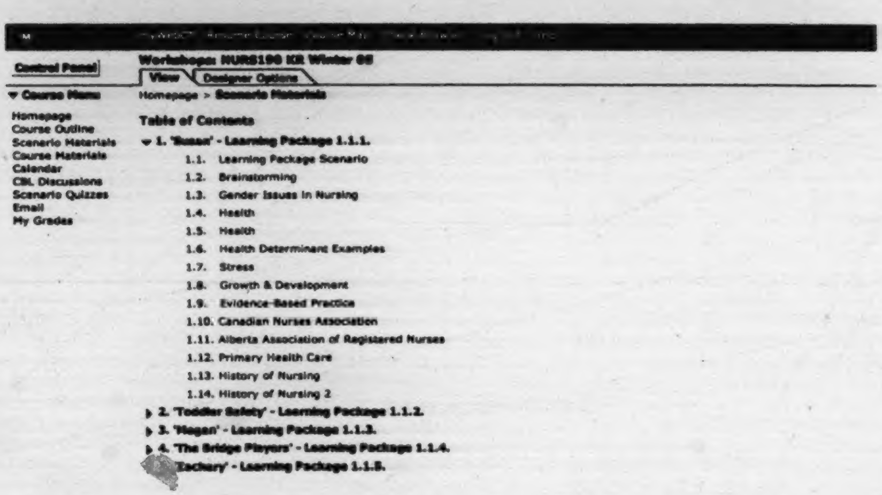
1. Evaluation of Professional Behaviors in Tutorials, Labs & FRS
2. Annotated Bibliography Assignment
3. Introduction to Context-Based Learning
4. Guidelines for Development of Professional Writing
5. Concept Map
6. Recommended Reading List

▾ **7. Suggested Readings**
  - ▸ **7.1. LP 1.1.1. - Susan**
  - ▸ **7.2. LP 1.1.2. - Toddler Safety**
  - ▸ **7.3. LP 1.1.3. - Megan**
  - ▸ **7.4. LP 1.1.4. - The Bridge Players**
  - ▸ **7.5. LP 1.1.5. - Zachary**

8. A Guide for Successfully Using WebCT

▸ **9. APA**

Student Research Materials (Scenario Materials)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Workshops: NURS190 KR Winter 05

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▾ **1. 'Susan' - Learning Package 1.1.1.**
  - 1.1. Learning Package Scenario
  - 1.2. Brainstorming
  - 1.3. Gender Issues in Nursing
  - 1.4. Health
  - 1.5. Health
  - 1.6. Health Determinant Examples
  - 1.7. Stress
  - 1.8. Growth & Development
  - 1.9. Evidence-Based Practice
  - 1.10. Canadian Nurses Association
  - 1.11. Alberta Association of Registered Nurses
  - 1.12. Primary Health Care
  - 1.13. History of Nursing
  - 1.14. History of Nursing 2

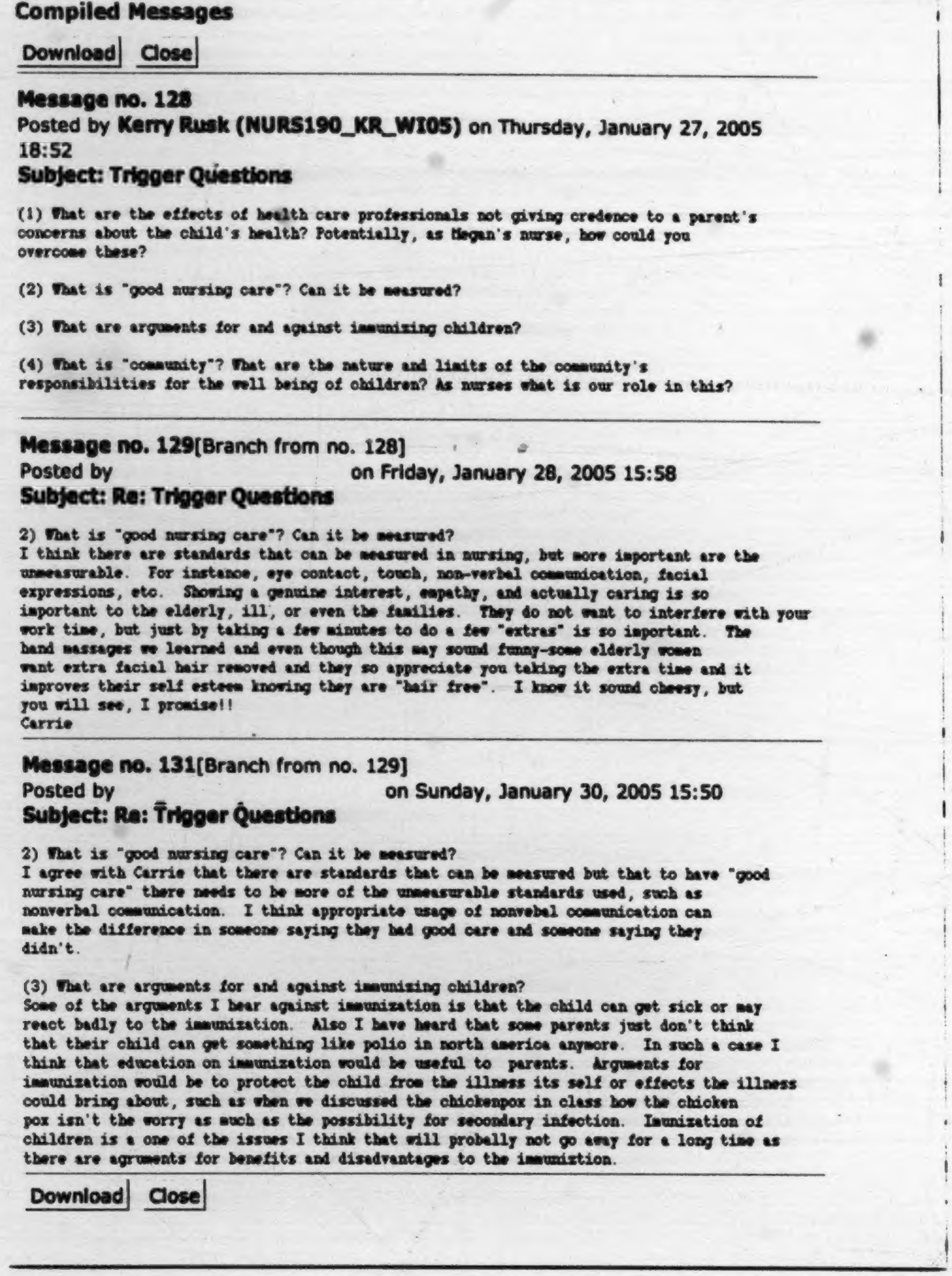
▸ **2. 'Toddler Safety' - Learning Package 1.1.2.**

▸ **3. 'Megan' - Learning Package 1.1.3.**

▸ **4. 'The Bridge Players' - Learning Package 1.1.4.**

[illegible] **'Zachary' - Learning Package 1.1.5.**

Sample Discussion Thread



Compiled Messages

Message no. 128
Posted by **Kerry Rusk (NURS190_KR_WI05)** on Thursday, January 27, 2005 18:52
Subject: Trigger Questions

(1) What are the effects of health care professionals not giving credence to a parent's concerns about the child's health? Potentially, as Megan's nurse, how could you overcome these?

(2) What is "good nursing care"? Can it be measured?

(3) What are arguments for and against immunizing children?

(4) What is "community"? What are the nature and limits of the community's responsibilities for the well being of children? As nurses what is our role in this?

Message no. 129[Branch from no. 128]
Posted by on Friday, January 28, 2005 15:58
Subject: Re: Trigger Questions

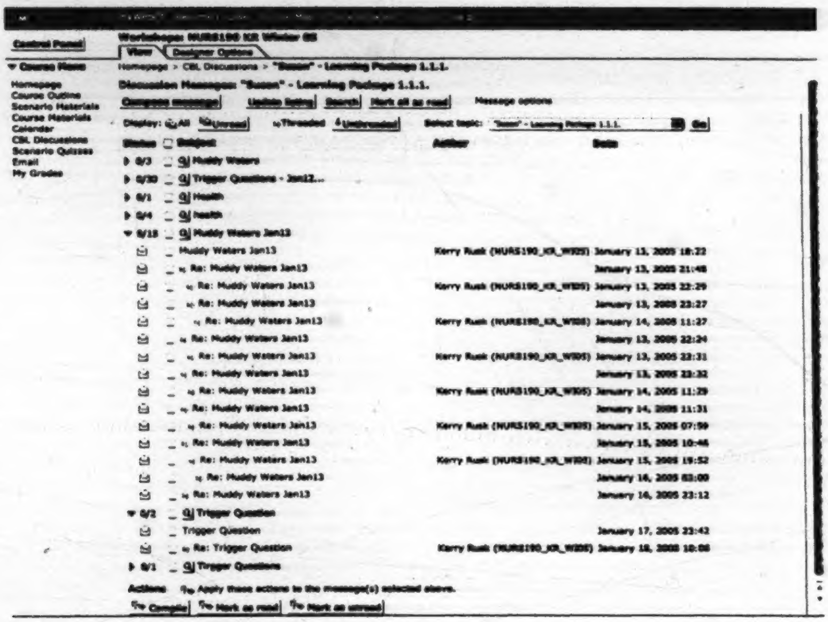
2) What is "good nursing care"? Can it be measured?
I think there are standards that can be measured in nursing, but more important are the unmeasurable. For instance, eye contact, touch, non-verbal communication, facial expressions, etc. Showing a genuine interest, empathy, and actually caring is so important to the elderly, ill, or even the families. They do not want to interfere with your work time, but just by taking a few minutes to do a few "extras" is so important. The hand massages we learned and even though this may sound funny-some elderly women want extra facial hair removed and they so appreciate you taking the extra time and it improves their self esteem knowing they are "hair free". I know it sound cheesy, but you will see, I promise!!
Carrie

Message no. 131[Branch from no. 129]
Posted by on Sunday, January 30, 2005 15:50
Subject: Re: Trigger Questions

2) What is "good nursing care"? Can it be measured?
I agree with Carrie that there are standards that can be measured but that to have "good nursing care" there needs to be more of the unmeasurable standards used, such as nonverbal communication. I think appropriate usage of nonvebal communication can make the difference in someone saying they had good care and someone saying they didn't.

(3) What are arguments for and against immunizing children?
Some of the arguments I hear against immunization is that the child can get sick or may react badly to the immunization. Also I have heard that some parents just don't think that their child can get something like polio in north america anymore. In such a case I think that education on immunization would be useful to parents. Arguments for immunization would be to protect the child from the illness its self or effects the illness could bring about, such as when we discussed the chickenpox in class how the chicken pox isn't the worry as much as the possibility for secondary infection. Imunization of children is a one of the issues I think that will probelly not go away for a long time as there are agruments for benefits and disadvantages to the immuniztion.

Discussion Board


Control Panel
Course Home
Homepage
Course Outline
Scenario Materials
Course Materials
Calendar
CBL Discussions
Scenario Quizzes
Email
My Grades
View
Designer Options
Compose message
Update listing
Search
Mark all as read
Message options
Display: All
Unread
Threaded
Unthreaded
Go
Compile
Mark as read
Mark as unread

Workshops: NURS190 KR Winter 05

Homepage > CBL Discussions > "Susan" - Learning Package 1.1.1.

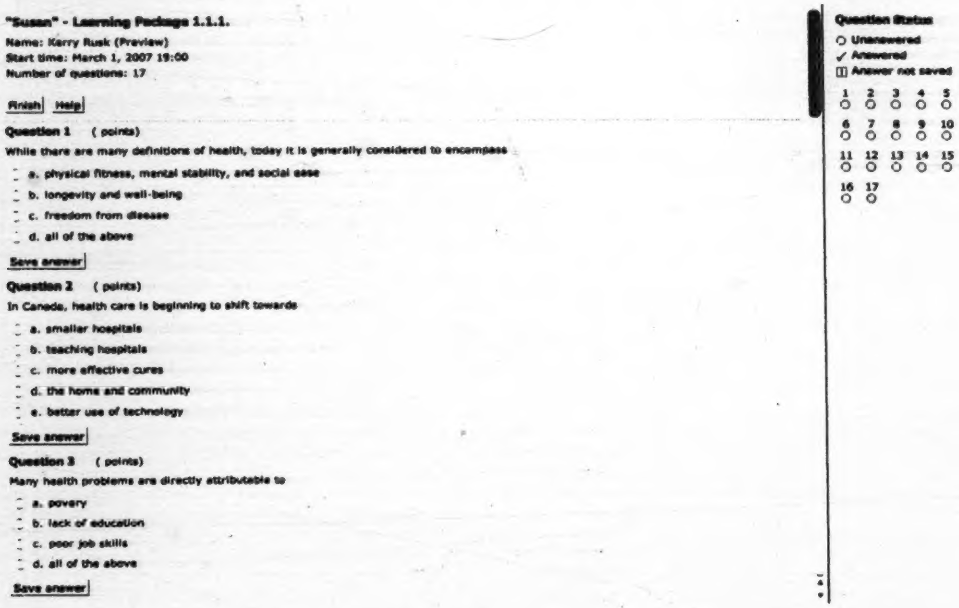
Discussion Messages: "Susan" - Learning Package 1.1.1.

Select topic: "Susan" - Learning Package 1.1.1.

Status	Subject	Author	Date
▶ 0/3	Muddy Waters		
▶ 0/30	Trigger Questions - Jan12...		
▶ 0/1	Health		
▶ 0/4	health		
▼ 0/18	Muddy Waters Jan13		
	Muddy Waters Jan13	Kerry Rusk (NURS190_KR_W05)	January 13, 2005 18:22
	Re: Muddy Waters Jan13		January 13, 2005 21:48
	Re: Muddy Waters Jan13	Kerry Rusk (NURS190_KR_W05)	January 13, 2005 22:29
	Re: Muddy Waters Jan13		January 13, 2005 23:27
	Re: Muddy Waters Jan13	Kerry Rusk (NURS190_KR_W05)	January 14, 2005 11:27
	Re: Muddy Waters Jan13		January 13, 2005 22:24
	Re: Muddy Waters Jan13	Kerry Rusk (NURS190_KR_W05)	January 13, 2005 22:31
	Re: Muddy Waters Jan13		January 13, 2005 23:32
	Re: Muddy Waters Jan13	Kerry Rusk (NURS190_KR_W05)	January 14, 2005 11:29
	Re: Muddy Waters Jan13		January 14, 2005 11:31
	Re: Muddy Waters Jan13	Kerry Rusk (NURS190_KR_W05)	January 15, 2005 07:59
	Re: Muddy Waters Jan13		January 15, 2005 10:46
	Re: Muddy Waters Jan13	Kerry Rusk (NURS190_KR_W05)	January 15, 2005 19:52
	Re: Muddy Waters Jan13		January 16, 2005 03:00
	Re: Muddy Waters Jan13		January 16, 2005 23:12
▼ 0/2	Trigger Question		
	Trigger Question		January 17, 2005 23:42
	Re: Trigger Question	Kerry Rusk (NURS190_KR_W05)	January 18, 2005 10:08
▶ 0/1	Trigger Questions		

Actions: Apply these actions to the message(s) selected above.

Scenario Quiz Tool


Finish
Help
Save answer
Question Status
○ Unanswered
✓ Answered
Answer not saved
1 ○ 2 ○ 3 ○ 4 ○ 5 ○
6 ○ 7 ○ 8 ○ 9 ○ 10 ○
11 ○ 12 ○ 13 ○ 14 ○ 15 ○
16 ○ 17 ○

"Susan" - Learning Package 1.1.1.

Name: Kerry Rusk (Preview)
Start time: March 1, 2007 19:00
Number of questions: 17

Question 1 (points)

While there are many definitions of health, today it is generally considered to encompass

○ a. physical fitness, mental stability, and social ease
○ b. longevity and well-being
○ c. freedom from disease
○ d. all of the above

Question 2 (points)

In Canada, health care is beginning to shift towards

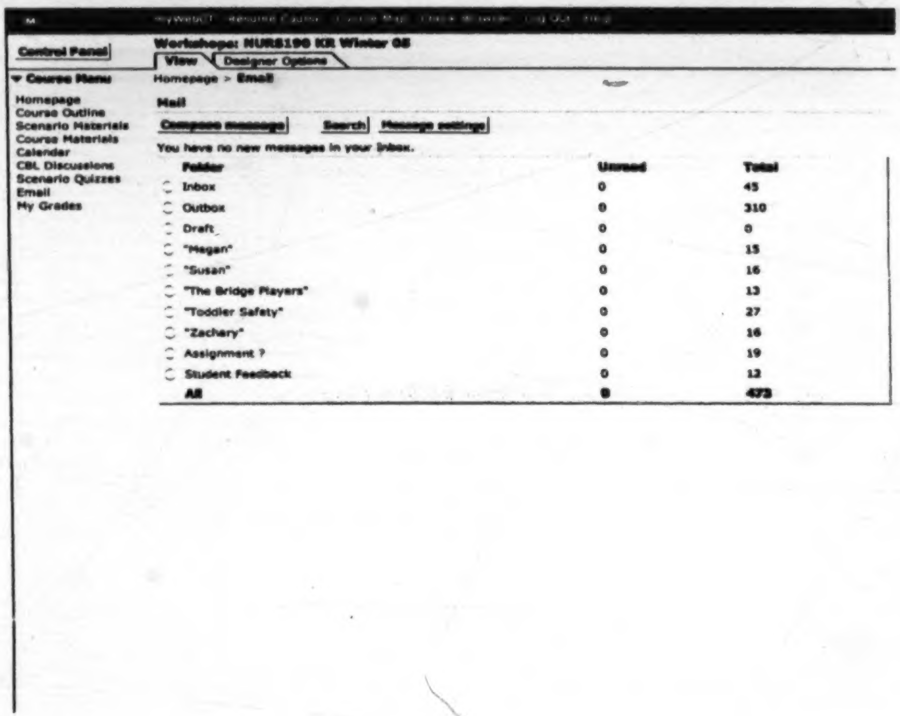
○ a. smaller hospitals
○ b. teaching hospitals
○ c. more effective cures
○ d. the home and community
○ e. better use of technology

Question 3 (points)

Many health problems are directly attributable to

○ a. povery
○ b. lack of education
○ c. poor job skills
○ d. all of the above

Email


myWebCT Resume Course Course Map Check Browser Log Out Help
Control Panel
Workshops: NURS190 KR Winter 08
View
Designer Options
Course Menu
Homepage
Course Outline
Scenario Materials
Course Materials
Calendar
CBL Discussions
Scenario Quizzes
Email
My Grades
Homepage > Email
Mail
Compose message
Search
Message settings

You have no new messages in your Inbox.

Folder	Unread	Total
○ Inbox	0	45
○ Outbox	0	310
○ Draft	0	0
○ "Megan"	0	15
○ "Susan"	0	16
○ "The Bridge Players"	0	13
○ "Toddler Safety"	0	27
○ "Zachary"	0	16
○ Assignment ?	0	19
○ Student Feedback	0	12
All	0	473

Appendix G – Learning Technologies Identified by Participants

- WebCT
- Palm Pilots/PDA
- Everything that goes on a Palm Pilot
- Computers
- Video/DVD
- "In the clinical area to me, the technology that is available….is also technology that they need to learn to use what we need to be able to get them to use properly"
- Calculators
- Simulation/Simulation Labs
- iPod
- Micro-recorders
- Cell phones/Blackberry's
- Email
- Word processing software
- Digital cameras
- Electronic stethoscopes
- Computer programs
- Presentation Software such as Powerpoint
- Elluminate
- Electronic databases
- Discussion boards
- Computers and Laptops
- "anything we use outside of a conversation or a lecture that will enhance the learning of students"
- "something that adds to the visual and hands on stuff"
- Blackboard
- Overhead projector
- Internet
- Virtual/Online Materials
- Textbooks
- Heart and lung sound software